



6560-50-P

## ENVIRONMENTAL PROTECTION AGENCY

### 40 CFR Part 52

#### [EPA-R03-OAR-2011-0091, EPA-R03-OAR-2011-0584; FRL-9622-3] Approval and Promulgation of Air Quality Implementation Plans; Commonwealth of Virginia; Regional Haze State Implementation Plan

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Proposed rule.

**SUMMARY:** EPA is proposing a limited approval and a limited disapproval of six revisions to the Virginia State Implementation Plan (SIP) submitted by the Commonwealth of Virginia, through the Department of Environmental Quality (VADEQ), that address regional haze for the first implementation period. These revisions address the requirements of the Clean Air Act (CAA or Act) and EPA's rules that require states to prevent any future and remedy any existing anthropogenic impairment of visibility in mandatory Class I areas (national parks and wilderness areas) caused by emissions of air pollutants from numerous sources located over a wide geographic area (also referred to as the "regional haze program"). States are required to assure reasonable progress toward the national goal of achieving natural visibility conditions in Class I areas. EPA is proposing a limited approval of these SIP revisions to implement the regional haze requirements for Virginia on the basis that the revisions, as a whole, strengthen the Virginia SIP. Also in this action, EPA is proposing a limited disapproval of these same SIP revisions because of the deficiencies in the Commonwealth's regional haze SIP submittal arising from the remand by the U.S. Court of Appeals for the District of Columbia (D.C. Circuit) to EPA of the Clean Air Interstate Rule (CAIR). EPA is also proposing to approve this revision as meeting the infrastructure requirements relating to visibility protection for the 1997 8-Hour Ozone National

Ambient Air Quality Standard (NAAQS) and the 1997 and 2006 fine particulate matter (PM<sub>2.5</sub>) NAAQS.

**DATES:** Comments must be received on or before [insert date 30 days from the date of publication in the Federal Register].

**ADDRESSES:** Submit your comments, identified by Docket ID Number **EPA-R03-OAR-2011-0091** and **EPA-R03-OAR-2011-0584** by one of the following methods:

- A. [www.regulations.gov](http://www.regulations.gov). Follow the on-line instructions for submitting comments.
- B. E-mail: [fernandez.cristina@epa.gov](mailto:fernandez.cristina@epa.gov).
- C. Mail: EPA-R03-OAR-2011-0091 and EPA-R03-OAR-2011-0584, Cristina Fernandez, Associate Director, Office of Air Program Planning, Mailcode 3AP30, U.S. Environmental Protection Agency, Region III, 1650 Arch Street, Philadelphia, Pennsylvania 19103.
- D. Hand Delivery: At the previously-listed EPA Region III address. Such deliveries are only accepted during the Docket's normal hours of operation, and special arrangements should be made for deliveries of boxed information.

**Instructions:** Direct your comments to Docket ID No. **EPA-R03-OAR-2011-0091** and **EPA-R03-OAR-2011-0584**. EPA's policy is that all comments received will be included in the public docket without change, and may be made available online at [www.regulations.gov](http://www.regulations.gov), including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through [www.regulations.gov](http://www.regulations.gov) or e-mail. The [www.regulations.gov](http://www.regulations.gov) website is an "anonymous access" system, which means EPA will not know your identity or contact information unless you provide

it in the body of your comment. If you send an e-mail comment directly to EPA without going through [www.regulations.gov](http://www.regulations.gov), your e-mail address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD-ROM you submit. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses.

***Docket:*** All documents in the electronic docket are listed in the [www.regulations.gov](http://www.regulations.gov) index. Although listed in the index, some information is not publicly available, i.e., CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically in [www.regulations.gov](http://www.regulations.gov) or in hard copy during normal business hours at the Air Protection Division, U.S. Environmental Protection Agency, Region III, 1650 Arch Street, Philadelphia, Pennsylvania 19103. Copies of the State submittal are available at the Virginia Department of Environmental Quality, 629 East Main Street, Richmond, Virginia 23219.

**FOR FURTHER INFORMATION CONTACT:** Melissa Linden, (215) 814-2096, or by e-mail at [linden.melissa@epa.gov](mailto:linden.melissa@epa.gov).

**SUPPLEMENTARY INFORMATION:** Throughout this document, whenever “we,” “us,” or “our” is used, we mean EPA. The Commonwealth of Virginia submitted revisions to its SIP for Regional Haze on July 17, 2008, March 6, 2009, January 14, 2010, October 4, 2010, November 19, 2010, and May 6, 2011.

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#### **I. What Action is EPA Proposing to Take?**

EPA is proposing a limited approval of Virginia's July 17, 2008, March 6, 2009, January 14, 2010, October 4, 2010, November 19, 2010, and May 6, 2011 SIP revisions addressing regional haze under CAA sections 301(a) and 110(k)(3) because the revisions as a whole strengthen the Virginia SIP. However, the Virginia SIP relies on CAIR, an EPA rule, to satisfy key elements of the regional haze requirements. Due to the remand of CAIR, *see North Carolina v. EPA*, 531 F.3d 836 (D.C. Cir. 2008), the revisions do not meet all of the applicable requirements of the CAA and EPA's regulations as set forth in sections 169A and 169B of the CAA and in 40 CFR 51.300-308. As a result, EPA is concurrently proposing a limited disapproval of Virginia's SIP revisions. The revisions nevertheless represent an improvement over the current SIP, and make considerable progress in fulfilling the applicable CAA regional haze program requirements.

Under CAA sections 301(a) and 110(k)(6) and EPA's long-standing guidance, a limited approval results in approval of the entire SIP submittal, even of those parts that are deficient and prevent EPA from granting a full approval of the SIP revision. *See Processing of State Implementation Plan (SIP) Revisions*, EPA Memorandum from John Calcagni, Director, Air Quality Management Division, OAQPS, to Air Division Directors, EPA Regional Offices I-X, September 7, 1992, (1992 Calcagni Memorandum) located at <http://www.epa.gov/ttn/caaa/t1/memoranda/siproc.pdf>. The deficiencies that EPA has identified as preventing a full approval of this SIP revision relate to the status and impact of CAIR on certain interrelated and required elements of the regional haze program. At the time the Virginia regional haze SIP was being developed, the Commonwealth's reliance on CAIR was fully consistent with EPA's regulations. 70 FR 39104, 39142 (July 6, 2005). CAIR, as originally promulgated, requires significant reductions in emissions of sulfur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>) to limit the interstate transport of these pollutants, and the reliance on CAIR by affected states as an alternative to requiring BART for electric generating units (EGUs) had specifically been upheld in *Utility Air Regulatory Group v. EPA*, 471 F.3d 1333 (D.C. Cir. 2006). In 2008, however, the D.C. Circuit remanded CAIR back to EPA. *North Carolina v. EPA*, 550 F.3d 1176. The Court found CAIR to be inconsistent with the requirements of the CAA, *North Carolina v. EPA*, 531 F.3d 896 (D.C. Cir. 2008), but ultimately remanded the rule to EPA without vacatur because it found that "allowing CAIR to remain in effect until it is replaced by a rule consistent with [the court's] opinion would at least temporarily preserve the environmental values covered by CAIR," *North Carolina v. EPA*, 550 F.3d at 1178. In response to the court's decision, EPA has issued a new rule to address interstate transport of NO<sub>x</sub> and SO<sub>2</sub> in the eastern United States (i.e., the Transport Rule, also known as the Cross-State Air Pollution

Rule). 76 FR 48208, August 8, 2011. In the Transport Rule, EPA finalized regulatory changes to sunset CAIR and the CAIR FIPs for control periods in 2012 and beyond. 76 FR 48322.

In the Transport Rule, EPA noted that it had not at that time conducted a technical analysis to determine whether compliance with the Transport Rule would satisfy the requirements of the RHR addressing alternatives to BART. EPA has since conducted such an analysis and has proposed that compliance with the Transport Rule will provide for greater reasonable progress toward improving visibility than source-specific BART controls for EGUs located in those states covered by the Transport Rule.<sup>1</sup> 76 FR 82219, December 30, 2011. On that same day, the D.C. Circuit issued an order addressing the status of the Transport Rule and CAIR in response to motions filed by numerous parties seeking a stay of the Transport Rule pending judicial review. In that order, the D.C. Circuit stayed the Transport Rule pending the court's resolution of the petitions for review of that rule in *EME Homer Generation, L.P. v. EPA* (No. 11-1302 and consolidated cases). The court also indicated that EPA is expected to continue to administer the CAIR in the interim until the court rules on the petitions for review of the Transport Rule.

## **II. What is the Background for EPA's Proposed Action?**

### **A. The Regional Haze Problem**

Regional haze is visibility impairment that is produced by a multitude of sources and activities which are located across a broad geographic area and emit fine particles (PM<sub>2.5</sub>) (e.g., sulfates, nitrates, organic carbon, elemental carbon, and soil dust), and their precursors (e.g., SO<sub>2</sub>, NO<sub>x</sub>,

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<sup>1</sup> Regional Haze: Revision to Provisions Governing Alternatives to Source-Specific Best Available Retrofit Technology (BART) Determinations, Limited SIP Approvals, and Federal Implementation Plans. This notice erroneously states in Footnote 5 that EPA has previously proposed a limited disapproval of Virginia's SIP. In fact, today's notice proposes a limited disapproval of Virginia's SIP.



and in some cases, ammonia (NH<sub>3</sub>) and volatile organic compounds (VOC)). Fine particle precursors react in the atmosphere to form fine particulate matter that impairs visibility by scattering and absorbing light. Visibility impairment reduces the clarity, color, and visible distance that one can see. PM<sub>2.5</sub> can also cause serious health effects and mortality in humans and contributes to environmental effects such as acid deposition and eutrophication.

Data from the existing visibility monitoring network, the “Interagency Monitoring of Protected Visual Environments” (IMPROVE) monitoring network, show that visibility impairment caused by air pollution occurs virtually all the time at most national park and wilderness areas. The average visual range<sup>2</sup> in many Class I areas<sup>3</sup> (i.e., national parks and memorial parks, wilderness areas, and international parks meeting certain size criteria) in the western United States is 100-150 kilometers, or about one-half to two-thirds of the visual range that would exist without anthropogenic air pollution. In most of the eastern Class I areas of the United States, the average visual range is less than 30 kilometers, or about one-fifth of the visual range that would exist under estimated natural conditions. 64 FR 35715, July 1, 1999.

## **B. Requirements of the CAA and EPA’s Regional Haze Rule (RHR)**

In section 169A of the 1977 Amendments to the CAA, Congress created a program for protecting visibility in the nation’s national parks and wilderness areas. This section of the CAA

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<sup>2</sup>Visual range is the greatest distance, in kilometers or miles, at which a dark object can be viewed against the sky.

<sup>3</sup>Areas designated as mandatory Class I Federal areas consist of national parks exceeding 6,000 acres, wilderness areas and national memorial parks exceeding 5,000 acres, and all international parks that were in existence on August 7, 1977. *See* 42 U.S.C. 7472(a). In accordance with section 169A of the CAA, EPA, in consultation with the Department of Interior, promulgated a list of 156 areas where visibility is identified as an important value. *See* 44 FR 69122, November 30, 1979. The extent of a mandatory Class I area includes subsequent changes in boundaries, such as park expansions. *See* 42 U.S.C. 7472(a). Although states and tribes may designate as Class I additional areas which they consider to have visibility as an important value, the requirements of the visibility program set forth in section 169A of the CAA apply only to “mandatory Class I Federal areas.” Each mandatory Class I Federal area is the responsibility of a “Federal Land Manager.” *See* 42 U.S.C. 7602(i). When the term “Class I area” is used in this action, it means a “mandatory Class I Federal area.”

establishes as a national goal the “prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from manmade air pollution.” On December 2, 1980, EPA promulgated regulations to address visibility impairment in Class I areas that is “reasonably attributable” to a single source or small group of sources, i.e., “reasonably attributable visibility impairment.” 45 FR 80084. These regulations represented the first phase in addressing visibility impairment. EPA deferred action on regional haze that emanates from a variety of sources until monitoring, modeling, and scientific knowledge about the relationships between pollutants and visibility impairment were improved.

Congress added section 169B to the CAA in 1990 to address regional haze issues. EPA promulgated a rule to address regional haze on July 1, 1999 (64 FR 35713), the RHR. The RHR revised the existing visibility regulations to integrate into the regulation provisions addressing regional haze impairment and established a comprehensive visibility protection program for Class I areas. The requirements for regional haze, found at 40 CFR 51.308 and 51.309, are included in EPA’s visibility protection regulations at 40 CFR 51.300-309. Some of the main elements of the regional haze requirements are summarized in section III of this notice. The requirement to submit a regional haze SIP applies to all 50 states, the District of Columbia, and the Virgin Islands.<sup>4</sup> 40 CFR 51.308(b) requires states to submit the first implementation plan addressing regional haze visibility impairment no later than December 17, 2007.

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<sup>4</sup>Albuquerque/Bernalillo County in New Mexico must also submit a regional haze SIP to completely satisfy the requirements of section 110(a)(2)(D) of the CAA for the entire State of New Mexico under the New Mexico Air Quality Control Act (section 74-2-4).

### **C. Roles of Agencies in Addressing Regional Haze**

Successful implementation of the regional haze program will require long-term regional coordination among states, tribal governments, and various Federal agencies. As noted above, pollution affecting the air quality in Class I areas can be transported over long distances, even hundreds of kilometers. Therefore, to effectively address the problem of visibility impairment in Class I areas, states need to develop strategies in coordination with one another, taking into account the effect of emissions from one jurisdiction on the air quality in another.

Because the pollutants that lead to regional haze can originate from sources located across broad geographic areas, EPA has encouraged the states and tribes across the United States to address visibility impairment from a regional perspective. Five regional planning organizations (RPOs) were developed to address regional haze and related issues. The RPOs first evaluated technical information to better understand how their states and tribes impact Class I areas across the country, and then pursued the development of regional strategies to reduce emissions of particulate matter (PM) and other pollutants leading to regional haze.

The Visibility Improvement State and Tribal Association of the Southeast (VISTAS) RPO is a collaborative effort of state governments, tribal governments, and various Federal agencies established to initiate and coordinate activities associated with the management of regional haze, visibility and other air quality issues in the southeastern United States. Member state and tribal governments include: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia, and the Eastern Band of the Cherokee Indians.

#### **D. Interstate Transport for Visibility**

Sections 110(a)(1) and 110(a)(2)(D)(i)(II) of the CAA require that within three years of promulgation of a NAAQS, a state must ensure that its SIP, among other requirements, “contains adequate provisions prohibiting any source or other types of emission activity within the State from emitting any air pollutant in amounts which will interfere with measures required to be included in the applicable implementation plan for any other State to protect visibility.”

Similarly, section 110(a)(2)(J) requires that such SIP “meet the applicable requirements of part C of (Subchapter I) (relating to visibility protection).”

EPA’s 2006 Guidance, entitled “Guidance for State Implementation Plan (SIP) Submissions to Meet Current Outstanding Obligations Under section 110(a)(2)(D)(i) for the 8-Hour Ozone and PM<sub>2.5</sub> National Ambient Air Quality Standards,” recognized the possibility that a state could potentially meet the visibility portions of section 110(a)(2)(D)(i)(II) through its submission of a Regional Haze SIP, as required by sections 169A and 169B of the CAA. EPA’s 2009 guidance, entitled “Guidance on SIP Elements Required Under Sections 110(a)(1) and (2) for the 2006 24-Hour Fine Particle (PM<sub>2.5</sub>) National Ambient Air Quality Standards (NAAQS),” recommended that a state could meet such visibility requirements through its Regional Haze SIP. EPA’s rationale supporting this recommendation was that the development of the regional haze SIPs was intended to occur in a collaborative environment among the states, and that through this process states would coordinate on emissions controls to protect visibility on an interstate basis. The common understanding was that, as a result of this collaborative environment, each state would take action to achieve the emissions reductions relied upon by other states in their reasonable progress demonstrations under the RHR. This interpretation is consistent with the

requirement in the RHR that a state participating in a regional planning process must include “all measures needed to achieve its apportionment of emission reduction obligations agreed upon through that process.” *See* 40 CFR 51.308(d)(3)(ii).

The regional haze program, as reflected in the RHR, recognizes the importance of addressing the long-range transport of pollutants for visibility and encourages states to work together to develop plans to address haze. The regulations explicitly require each state to address its “share” of the emission reductions needed to meet the reasonable progress goals for neighboring Class I areas. States working together through a regional planning process, are required to address an agreed upon share of their contribution to visibility impairment in the Class I areas of their neighbors. *See* 40 CFR 51.308(d)(3)(ii). Given these requirements, appropriate regional haze SIPs will contain measures that will achieve these emissions reductions and will meet the applicable visibility related requirements of section 110(a)(2). As a result of the regional planning efforts in VISTAS, all states in the VISTAS region provided an analysis of the causes of haze, and the levels of contribution from all sources within each state to the visibility degradation of each Class I area. The VISTAS states consulted in the development of the area of influence (AOI), using the products of this technical consultation process to co-develop the Commonwealth’s reasonable progress goals for their Class I areas. The modeling done by VISTAS relied on assumptions regarding emissions over the relevant planning period and embedded in these assumptions were anticipated emissions reductions in each of the states in VISTAS, including reductions from BART and other measures to be adopted as part of the state’s long term strategy for addressing regional haze.

The Commonwealth submitted Virginia's Regional Haze SIP revisions on July 17, 2008 for Georgia Pacific Corporation BART determination and permit; March 6, 2009 for MeadWestvaco Corporation BART determination and permit; January 14, 2010 for O-N Minerals Facility BART determination and permit; October 4, 2010 for the comprehensive regional haze SIP; November 19, 2010 for the revision to the O-N Minerals Facility BART determination and permit; and May 6, 2011 for the MeadWestvaco Corporation Reasonable Progress permit, to address the requirements of the RHR. On December 10, 2007, December 13, 2007, June 8, 2010, and June 9, 2010, Virginia submitted its 1997 Ozone NAAQS infrastructure SIP submittals. On July 10, 2008, September 2, 2008, June 8, 2010, June 9, 2010, and August 30, 2010, Virginia submitted its 1997 PM<sub>2.5</sub> NAAQS infrastructure SIP submittals. On August 30, 2010 and April 1, 2011, Virginia submitted its 2006 PM<sub>2.5</sub> NAAQS infrastructure SIP submittals. Infrastructure SIP submittals are required to be submitted by every state for each NAAQS promulgated by EPA to fulfill the requirements in section 110(a)(2) of the CAA. Visibility protection is a requirement of these infrastructure SIPs in sections 110(a)(2)(D)(i)(II) and 110(a)(2)(J) of the CAA and are addressed in the abovementioned submittals by Virginia. EPA has reviewed Virginia's Regional Haze SIP and as explained in section VII of this action, proposes to find that Virginia's Regional Haze submittal meets the portions of the requirements of the CAA sections 110(a)(2) relating to visibility protection for the 1997 8-Hour Ozone NAAQS and the 1997 and 2006 PM<sub>2.5</sub> NAAQS.

### **III. What are the Requirements for Regional Haze SIPs?**

#### **A. The CAA and the RHR**

Regional haze SIPs must assure reasonable progress towards the national goal of achieving natural visibility conditions in Class I areas. Section 169A of the CAA and EPA's implementing

regulations require states to establish long-term strategies for making reasonable progress toward meeting this goal. Implementation plans must also give specific attention to certain stationary sources that were in existence on August 7, 1977, but were not in operation before August 7, 1962, and require these sources, where appropriate, to install BART controls for the purpose of eliminating or reducing visibility impairment. The specific regional haze SIP requirements are discussed in further detail below.

## **B. Determination of Baseline, Natural, and Current Visibility Conditions**

The RHR establishes the deciview as the principal metric or unit for expressing visibility. This visibility metric expresses uniform changes in haziness in terms of common increments across the entire range of visibility conditions, from pristine to extremely hazy conditions. Visibility expressed in deciviews is determined by using air quality measurements to estimate light extinction and then transforming the value of light extinction using a logarithm function. The deciview is a more useful measure for tracking progress in improving visibility than light extinction itself because each deciview change is an equal incremental change in visibility perceived by the human eye. Most people can detect a change in visibility at one deciview.<sup>5</sup>

The deciview is used in expressing RPGs (which are interim visibility goals towards meeting the national visibility goal), defining baseline, current, and natural conditions, and tracking changes in visibility. The regional haze SIPs must contain measures that ensure “reasonable progress” toward the national goal of preventing and remedying visibility impairment in Class I areas caused by anthropogenic air pollution by reducing anthropogenic emissions that cause regional

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<sup>5</sup>The preamble to the RHR provides additional details about the deciview. 64 FR 35714, 35725, July 1, 1999.

haze. The national goal is a return to natural conditions, i.e., anthropogenic sources of air pollution would no longer impair visibility in Class I areas.

To track changes in visibility over time at each of the 156 Class I areas covered by the visibility program (40 CFR 81.401-437), and as part of the process for determining reasonable progress, states must calculate the degree of existing visibility impairment at each Class I area at the time of each regional haze SIP submittal and periodically review progress every five years, i.e., midway through each 10-year implementation period. To do this, the RHR requires states to determine the degree of impairment (in deciviews) for the average of the 20 percent least impaired (“best”) and 20 percent most impaired (“worst”) visibility days over a specified time period at each of their Class I areas. In addition, states must also develop an estimate of natural visibility conditions for the purpose of comparing progress toward the national goal. Natural visibility is determined by estimating the natural concentrations of pollutants that cause visibility impairment and then calculating total light extinction based on those estimates. EPA has provided guidance to states regarding how to calculate baseline, natural, and current visibility conditions in documents titled, EPA’s *Guidance for Estimating Natural Visibility conditions under the Regional Haze Rule*, September 2003, (EPA-454/B-03-005 located at [http://www.epa.gov/ttncaaa1/t1/memoranda/rh\\_envcurhr\\_gd.pdf](http://www.epa.gov/ttncaaa1/t1/memoranda/rh_envcurhr_gd.pdf)), (hereinafter referred to as “EPA’s 2003 Natural Visibility Guidance”), and *Guidance for Tracking Progress Under the Regional Haze Rule*, September 2003, (EPA-454/B-03-004 located at [http://www.epa.gov/ttncaaa1/t1/memoranda/rh\\_tpurhr\\_gd.pdf](http://www.epa.gov/ttncaaa1/t1/memoranda/rh_tpurhr_gd.pdf)), (hereinafter referred to as “EPA’s 2003 Tracking Progress Guidance”).



For the first regional haze SIPs that were due by December 17, 2007, “baseline visibility conditions” were the starting points for assessing “current” visibility impairment. Baseline visibility conditions represent the degree of visibility impairment for the 20 percent least impaired days and 20 percent most impaired days for each calendar year from 2000 to 2004. Using monitoring data for 2000 through 2004, states are required to calculate the average degree of visibility impairment for each Class I area, based on the average of annual values over the five-year period. The comparison of initial baseline visibility conditions to natural visibility conditions indicates the amount of improvement necessary to attain natural visibility, while the future comparison of baseline conditions to the then current conditions will indicate the amount of progress made. In general, the 2000 - 2004 baseline period is considered the time from which improvement in visibility is measured.

### **C. Determination of Reasonable Progress Goals (RPGs)**

The vehicle for ensuring continuing progress towards achieving the natural visibility goal is the submission of a series of regional haze SIPs from the states that establish two RPGs (i.e., two distinct goals, one for the “best” and one for the “worst” days) for every Class I area for each (approximately) 10-year implementation period. The RHR does not mandate specific milestones or rates of progress, but instead calls for states to establish goals that provide for “reasonable progress” toward achieving natural (i.e., “background”) visibility conditions. In setting RPGs, states must provide for an improvement in visibility for the most impaired days over the (approximately) 10-year period of the SIP, and ensure no degradation in visibility for the least impaired days over the same period.

States have significant discretion in establishing RPGs, but are required to consider the following factors established in section 169A of the CAA and in EPA's RHR at 40 CFR

51.308(d)(1)(i)(A): (1) the costs of compliance; (2) the time necessary for compliance; (3) the energy and non-air quality environmental impacts of compliance; and (4) the remaining useful life of any potentially affected sources. States must demonstrate in their SIPs how these factors are considered when selecting the RPGs for the best and worst days for each applicable Class I area. States have considerable flexibility in how they take these factors into consideration, as noted in EPA's *Guidance for Setting Reasonable Progress Goals under the Regional Haze Program*, ("EPA's Reasonable Progress Guidance"), July 1, 2007, memorandum from William L. Wehrum, Acting Assistant Administrator for Air and Radiation, to EPA Regional Administrators, EPA Regions 1-10 (pp. 4-2, 5-1). In setting the RPGs, states must also consider the rate of progress needed to reach natural visibility conditions by 2064 (referred to as the "uniform rate of progress" or the "glidepath") and the emission reduction measures needed to achieve that rate of progress over the 10-year period of the SIP. Uniform progress towards achievement of natural conditions by the year 2064 represents a rate of progress which states are to use for analytical comparison to the amount of progress they expect to achieve. In setting RPGs, each state with one or more Class I areas ("Class I state") must also consult with potentially "contributing states," i.e., other nearby states with emission sources that may be affecting visibility impairment at the Class I state's areas. *See* 40 CFR 51.308(d)(1)(iv).

#### **D. Best Available Retrofit Technology (BART)**

Section 169A of the CAA directs states to evaluate the use of retrofit controls at certain larger, often uncontrolled, older stationary sources in order to address visibility impacts from these

sources. Specifically, section 169A(b)(2)(A) of the CAA requires states to revise their SIPs to contain such measures as may be necessary to make reasonable progress towards the natural visibility goal, including a requirement that certain categories of existing major stationary sources<sup>6</sup> built between 1962 and 1977 procure, install, and operate the “Best Available Retrofit Technology” as determined by the state. Under the RHR, states are directed to conduct BART determinations for such “BART-eligible” sources that may be anticipated to cause or contribute to any visibility impairment in a Class I area. Rather than requiring source-specific BART controls, states also have the flexibility to adopt an emissions trading program or other alternative program as long as the alternative provides greater reasonable progress towards improving visibility than BART.

On July 6, 2005, EPA published the *Guidelines for BART Determinations Under the Regional Haze Rule* at appendix Y to 40 CFR part 51 (hereinafter referred to as the “BART Guidelines”) to assist states in determining which of their sources should be subject to the BART requirements and in determining appropriate emission limits for each applicable source. In making a BART determination for a fossil fuel-fired electric generating plant with a total generating capacity in excess of 750 megawatts (MW), a state must use the approach set forth in the BART Guidelines. A state is encouraged, but not required, to follow the BART Guidelines in making BART determinations for other types of sources.

States must address all visibility-impairing pollutants emitted by a source in the BART determination process. The most significant visibility impairing pollutants are SO<sub>2</sub>, NO<sub>x</sub>, and

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<sup>6</sup>The set of “major stationary sources” potentially subject to BART is listed in CAA section 169A(g)(7).

PM. EPA has stated that states should use their best judgment in determining whether VOC or NH<sub>3</sub> compounds impair visibility in Class I areas.

Under the BART Guidelines, states may select an exemption threshold value for their BART modeling, below which a BART-eligible source would not be expected to cause or contribute to visibility impairment in any Class I area. The state must document this exemption threshold value in the SIP and must state the basis for its selection of that value. Any source with emissions that model above the threshold value would be subject to a BART determination review. The BART Guidelines acknowledge varying circumstances affecting different Class I areas. States should consider the number of emission sources affecting the Class I areas at issue and the magnitude of the individual source's impacts. Any exemption threshold set by the state should not be higher than 0.5 deciview.

In their SIPs, states must identify potential BART sources, described as "BART-eligible sources" in the RHR, and document their BART control determination analyses. In making BART determinations, section 169A(g)(2) of the CAA requires that states consider the following factors: (1) the costs of compliance, (2) the energy and non-air quality environmental impacts of compliance, (3) any existing pollution control technology in use at the source, (4) the remaining useful life of the source, and (5) the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology. States are free to determine the weight and significance to be assigned to each factor.

A regional haze SIP must include source-specific BART emission limits and compliance

schedules for each source subject to BART. Once a state has made its BART determination, the BART controls must be installed and in operation as expeditiously as practicable, but no later than five years after the date of EPA approval of the regional haze SIP. *See* CAA section 169(g)(4) and 40 CFR 51.308(e)(1)(iv). In addition to what is required by the RHR, general SIP requirements mandate that the SIP must also include all regulatory requirements related to monitoring, recordkeeping, and reporting for the BART controls on the source.

As noted above, the RHR allows states to implement an alternative program in lieu of BART so long as the alternative program can be demonstrated to achieve greater reasonable progress toward the national visibility goal than would BART. Under regulations issued in 2005 revising the regional haze program, EPA made just such a demonstration for CAIR. 70 FR 39104, July 6, 2005. EPA's regulations provide that states participating in the CAIR cap-and-trade program under 40 CFR part 96 pursuant to an EPA-approved CAIR SIP or which remain subject to the CAIR FIP in 40 CFR part 97 need not require affected BART-eligible EGUs to install, operate, and maintain BART for emissions of SO<sub>2</sub> and NO<sub>x</sub>. *See* 40 CFR 51.308(e)(4). Because CAIR did not address direct emissions of PM, states were still required to conduct a BART analysis for PM emissions from EGUs subject to BART for that pollutant.

On December 30, 2011, EPA proposed to find that the trading programs in the Transport Rule would achieve greater reasonable progress towards the national goal than would BART in the states in which the Transport Rule applies. 76 FR 82219. EPA also proposed to revise the RHR to allow states to meet the requirements of an alternative program in lieu of BART by

participation in the trading programs under the Transport Rule. EPA has not taken final action on that rule.

#### **E. Long-Term Strategy (LTS)**

Consistent with the requirement in section 169A(b) of the CAA that states include in their regional haze SIP a 10 to 15 year strategy for making reasonable progress, section 51.308(d)(3) of the RHR requires that states include a LTS in their regional haze SIPs. The LTS is the compilation of all control measures a state will use during the implementation period of the specific SIP submittal to meet applicable RPGs. The LTS must include “enforceable emissions limitations, compliance schedules, and other measures as necessary to achieve the reasonable progress goals” for all Class I areas within, or affected by emissions from, the state. *See* 40 CFR 51.308(d)(3).

When a state’s emissions are reasonably anticipated to cause or contribute to visibility impairment in a Class I area located in another state, the RHR requires the impacted state to coordinate with the contributing states in order to develop coordinated emissions management strategies. *See* 40 CFR 51.308(d)(3)(i). In such cases, the contributing state must demonstrate that it has included, in its SIP, all measures necessary to obtain its share of the emissions reductions needed to meet the RPGs for the Class I area. The RPOs have provided forums for significant interstate consultation, but additional consultations between states may be required to sufficiently address interstate visibility issues. This is especially true where two states belong to different RPOs.

States should consider all types of anthropogenic sources of visibility impairment in developing their LTS, including stationary, minor, mobile, and area sources. At a minimum, states must describe how each of the following seven factors listed below are taken into account in developing their LTS: (1) emissions reductions due to ongoing air pollution control programs, including measures to address RAVI; (2) measures to mitigate the impacts of construction activities; (3) emissions limitations and schedules for compliance to achieve the RPG; (4) source retirement and replacement schedules; (5) smoke management techniques for agricultural and forestry management purposes including plans as currently exist within the state for these purposes; (6) enforceability of emissions limitations and control measures; and (7) the anticipated net effect on visibility due to projected changes in point, area, and mobile source emissions over the period addressed by the LTS. *See* 40 CFR 51.308(d)(3)(v).

#### **F. Coordinating Regional Haze and Reasonably Attributable Visibility Impairment (RAVI) LTS**

As part of the RHR, EPA revised 40 CFR 51.306(c) regarding the LTS for RAVI to require that the RAVI plan must provide for a periodic review and SIP revision not less frequently than every three years until the date of submission of the state's first plan addressing regional haze visibility impairment, which was due December 17, 2007, in accordance with 40 CFR 51.308(b) and (c). On or before this date, the state must revise its plan to provide for review and revision of a coordinated LTS for addressing RAVI and regional haze, and the state must submit the first such coordinated LTS with its first regional haze SIP. Future coordinated LTS's, and periodic progress reports evaluating progress towards RPGs, must be submitted consistent with the schedule for SIP submission and periodic progress reports set forth in 40 CFR 51.308(f) and

51.308(g), respectively. The periodic review of a state's LTS must report on both regional haze and RAVI impairment and must be submitted to EPA as a SIP revision.

### **G. Monitoring Strategy and Other Implementation Plan Requirements**

Section 51.308(d)(4) of the RHR includes the requirement for a monitoring strategy for measuring, characterizing, and reporting of regional haze visibility impairment that is representative of all mandatory Class I Federal areas within the state. The strategy must be coordinated with the monitoring strategy required in section 51.305 for RAVI. Compliance with this requirement may be met through "participation" in the IMPROVE network, i.e., review and use of monitoring data from the network. The monitoring strategy is due with the first regional haze SIP, and it must be reviewed every five years. The monitoring strategy must also provide for additional monitoring sites if the IMPROVE network is not sufficient to determine whether RPGs will be met. The SIP must also provide for the following:

- Procedures for using monitoring data and other information in a state with mandatory Class I areas to determine the contribution of emissions from within the state to regional haze visibility impairment at Class I areas both within and outside the state;
- Procedures for using monitoring data and other information in a state with no mandatory Class I areas to determine the contribution of emissions from within the state to regional haze visibility impairment at Class I areas in other states;
- Reporting of all visibility monitoring data to the Administrator at least annually for each Class I area in the state, and where possible, in electronic format;
- Developing a statewide inventory of emissions of pollutants that are reasonably anticipated to cause or contribute to visibility impairment in any Class I area. The



- inventory must include emissions for a baseline year, emissions for the most recent year for which data are available, and estimates of future projected emissions. A state must also make a commitment to update the inventory periodically; and
- Other elements, including reporting, recordkeeping, and other measures necessary to assess and report on visibility.

The RHR requires control strategies to cover an initial implementation period extending to the year 2018, with a comprehensive reassessment and revision of those strategies, as appropriate, every 10 years thereafter. Periodic SIP revisions must meet the core requirements of section 51.308(d) with the exception of BART. The requirement to evaluate sources for BART applies only to the first regional haze SIP. Facilities subject to BART must continue to comply with the BART provisions of section 51.308(e), as noted above. Periodic SIP revisions will assure that the statutory requirement of reasonable progress will continue to be met.

#### **H. Consultation with States and Federal Land Managers (FLMs)**

The RHR requires that states consult with FLMs before adopting and submitting their SIPs. *See* 40 CFR 51.308(i). States must provide FLMs an opportunity for consultation, in person and at least 60 days prior to holding any public hearing on the SIP. This consultation must include the opportunity for the FLMs to discuss their assessment of impairment of visibility in any Class I area and to offer recommendations on the development of the RPGs and on the development and implementation of strategies to address visibility impairment. Further, a state must include in its SIP a description of how it addressed any comments provided by the FLMs. Finally, a SIP must provide

procedures for continuing consultation between the state and FLMs regarding the state's visibility protection program, including development and review of SIP revisions, five-year progress reports, and the implementation of other programs having the potential to contribute to impairment of visibility in Class I areas.

#### **IV. What is the Relationship of the CAIR and the Transport Rule to the Regional Haze Requirements?**

##### **A. Overview of EPA's CAIR**

CAIR, as originally promulgated, required 28 states and the District of Columbia to reduce emissions of SO<sub>2</sub> and NO<sub>x</sub> that significantly contributed to, or interfered with maintenance of, the 1997 national ambient air quality standards (NAAQS) for fine particulates and/or the 1997 NAAQS for 8-hour ozone in any downwind state. 70 FR 25162, May 12, 2005. CAIR established emissions budgets for SO<sub>2</sub> and NO<sub>x</sub> for states found to contribute significantly to nonattainment in downwind states and required these states to submit SIP revisions that implemented these budgets. States had the flexibility to choose which control measures to adopt to achieve the budgets, including participation in EPA-administered cap-and-trade programs addressing SO<sub>2</sub>, NO<sub>x</sub>-annual, and NO<sub>x</sub>-ozone season emissions. In 2006, EPA promulgated FIPs for all states covered by CAIR to ensure the reductions would be achieved in a timely manner.

##### **B. Remand of the CAIR and Promulgation of the Transport Rule**

On July 11, 2008, the D.C. Circuit issued its decision to vacate and remand both CAIR and the associated CAIR FIPs in their entirety. *North Carolina v. EPA*, 531 F.3d 836 (D.C. Cir. 2008). However, in response to EPA's petition for rehearing, the court issued an order remanding CAIR

to EPA without vacating either CAIR or the CAIR FIPs. The court thereby left the EPA CAIR rule and CAIR SIPs and FIPs in place in order to “temporarily preserve the environmental values covered by CAIR” until EPA replaces it with a rule consistent with the court's opinion. *North Carolina v. EPA*, 550 F.3d at 1178. EPA replaced CAIR with the Transport Rule in August 2011. 76 FR 48208, August 8, 2011. As described in section I of this notice, the Transport Rule has been stayed pending judicial review and, consistent with the order of the D.C. Circuit, EPA is again administering CAIR until the D.C. Circuit rules on the challenges to the Transport Rule.

### **C. Regional Haze SIP Elements Potentially Affected by the CAIR Remand and Promulgation of the Transport Rule**

The following is a summary of the elements of the regional haze SIPs that are potentially affected by the remand of CAIR. As described above, EPA determined in 2005 that states opting to participate in the CAIR cap-and-trade program need not require BART for SO<sub>2</sub> and NO<sub>x</sub> at BART-eligible EGUs. 70 FR 39142-39143. Many states relied on CAIR as an alternative to BART for SO<sub>2</sub> and NO<sub>x</sub> for subject EGUs, as allowed under the BART provisions at 40 CFR 51.308(e)(4). Additionally, several states established RPGs that reflect the improvement in visibility expected to result from controls planned for or already installed on sources within the state to meet the CAIR provisions for this implementation period for specified pollutants. Many states relied upon their own CAIR SIPs or the CAIR FIPs for their states to provide the legal requirements that lead to these planned controls, and did not include enforceable measures in the LTS in the regional haze SIP submission to ensure these reductions. States also submitted demonstrations showing that no additional controls on EGUs beyond CAIR would be reasonable for this implementation period. In the case of Virginia, the SIP revisions related to regional haze

rely on CAIR as an alternative to BART for SO<sub>2</sub> and NO<sub>x</sub> for subject EGUs, and the RPGs reflect the improvement in visibility expected (at the time) to result from CAIR. EPA has determined in other rulemakings that because of the deficiencies identified in CAIR by the court and the sunseting of CAIR by the Transport Rule, it would be inappropriate to fully approve states' LTSs that rely upon the emissions reductions predicted to result from CAIR to meet the BART requirement for EGUs or to meet the RPGs in the states' regional haze SIPs. Although CAIR is currently being administered by EPA pursuant to an order by D.C. Circuit in *EME Homer Generation, L.P. v. EPA*, it will not remain in effect indefinitely. For this reason, EPA cannot fully approve regional haze SIP revisions that rely on CAIR for emission reduction measures. However, as discussed in section IV.D of this notice, EPA still believes it is appropriate to propose a limited approval of Virginia's regional haze SIP revisions (listed above in section II.D) as these revisions provide an improvement over the current SIP, and make progress in fulfilling the applicable CAA regional haze program requirements. EPA therefore proposes to grant limited approval and limited disapproval of the six Virginia regional haze SIP revisions.<sup>7</sup> The next section discusses how EPA proposes to address these deficiencies.

In the Transport Rule, EPA did not substantively address the question of whether the emissions reductions from the Transport Rule will provide for greater reasonable progress than BART. EPA explained in that rulemaking that EPA had not yet conducted any technical analysis to determine whether the Transport Rule would provide sufficient emissions reductions and concomitant improvements in visibility to be considered to provide for greater reasonable progress than BART. The EPA has now completed such

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<sup>7</sup> EPA mistakenly stated in a recent proposed rule (76 FR 82219) that EPA had already proposed limited disapproval the Virginia regional haze SIP based on its reliance on CAIR. See 76 FR at 82221, December 30, 2011. EPA is proposing limited disapproval in today's action.

an analysis and has proposed the Transport Rule as an alternative to BART for EGUs located in the Transport Rule states (which include Virginia). 76 FR 82219.

#### **D. Rationale and Scope of Proposed Limited Approval and Limited Disapproval**

EPA is proposing a limited approval of Virginia's regional haze SIP revisions. Limited approval results in approval of the entire regional haze submission and all its elements. EPA is taking this approach because an affected state's SIP will be stronger and more protective of the environment with the implementation of measures taken by the state and with Federal approval and enforceability than it would without those measures being included in the state's SIP.

EPA is also proposing a limited disapproval of the Virginia regional haze SIP revisions that rely on CAIR. As explained in the 1992 Calcagni Memorandum, "[t]hrough a limited approval, EPA [will] concurrently, or within a reasonable period of time thereafter, disapprove the rule...for not meeting all of the applicable requirements of the Act. ... [T]he limited disapproval is a rulemaking action, and it is subject to notice and comment." Final limited disapproval of a SIP submittal does not affect the Federal enforceability of the measures in the subject SIP revision nor prevent state implementation of these measures. The legal effects of a final limited disapproval are to provide EPA the authority to issue a FIP at any time, and to obligate EPA to take such action no more than two years after the effective date of the final limited disapproval action. On December 30, 2011, EPA proposed a partial regional haze Federal Implementation Plan (FIP) that would provide that the BART requirements for SO<sub>2</sub> and NO<sub>x</sub> emissions from EGUs in Virginia is satisfied by the already-promulgated Transport Rule FIP applicable to EGU sources in Virginia, as would be allowed by a proposed revision to the Regional Haze Rule that

was included in the same notice. 76 FR 82219. Comments on the proposed regional haze FIP are requested and may be submitted to the docket for this action or to the docket for the proposed regional haze rule revisions (Docket ID No. EPA-HQ-OAR-2011-0729). The EPA encourages Virginia, as it does all states in a similar situation, to submit a revision to its regional haze SIP incorporating the requirements of the Transport Rule as the alternative to BART for SO<sub>2</sub> and NO<sub>x</sub> emissions from EGUs, at which time we will withdraw the regional haze FIP.

## **V. What is EPA's Analysis of Virginia's Regional Haze Submittal?**

On July 17, 2008, March 6, 2009, January 14, 2010, October 4, 2010, November 19, 2010, and May 6, 2011, VADEQ submitted revisions to the Virginia SIP to address regional haze in the Commonwealth's Class I area as required by EPA's RHR.

### **A. Affected Class I Areas**

Virginia has two Class I areas within its borders: Shenandoah National Park and James River Face Wilderness Area. Virginia is responsible for developing a regional haze SIP that addresses these Class I areas and for consulting with other states that impact these areas.

The October 4, 2010, Virginia regional haze SIP establishes RPGs for visibility improvement at Shenandoah National Park and James River Face Wilderness Area and a LTS to achieve those RPGs within the first regional haze implementation period ending in 2018. In developing the LTS for the areas, Virginia considered both emission sources inside and outside of Virginia that may cause or contribute to visibility impairment in Virginia's Class I areas. The Commonwealth also identified and considered emission sources within Virginia that may cause or contribute to

visibility impairment in Class I areas in neighboring states as required by 40 CFR 51.308(d)(3).

The VISTAS RPO worked with the Commonwealth in developing the technical analyses used to make these determinations, including state-by-state contributions to visibility impairment in specific Class I areas, which included the Class I areas in Virginia and those areas affected by emissions from Virginia.

## **B. Determination of Baseline, Natural, and Current Visibility Conditions**

As required by the RHR and in accordance with EPA's 2003 Natural Visibility Guidance, Virginia calculated baseline/current and natural visibility conditions for its Class I area, as summarized below.

### **1. Estimating Natural Visibility Conditions**

Natural background visibility, as defined in EPA's 2003 Natural Visibility Guidance, is estimated by calculating the expected light extinction using default estimates of natural concentrations of fine particle components adjusted by site-specific estimates of humidity. This calculation uses the IMPROVE equation, which is a formula for estimating light extinction from the estimated natural concentrations of fine particle components (or from components measured by the IMPROVE monitors). As documented in EPA's 2003 Natural Visibility Guidance, EPA allows states to use "refined" or alternative approaches to 2003 EPA guidance to estimate the values that characterize the natural visibility conditions of the Class I areas. One alternative approach is to develop and justify the use of alternative estimates of natural concentrations of fine particle components. Another alternative is to use the "new IMPROVE equation" that was

adopted for use by the IMPROVE Steering Committee in December 2005.<sup>8</sup> The purpose of this refinement to the “old IMPROVE equation” is to provide more accurate estimates of the various factors that affect the calculation of light extinction. Virginia opted to use this refined approach, referred to as the “new IMPROVE equation,” for its Class I areas.

Natural visibility conditions using the new IMPROVE equation were calculated separately for each Class I area by VISTAS. Natural background visibility, as defined in EPA’s 2003 Natural Visibility Guidance, is estimated by calculating the expected light extinction using default estimates of natural concentrations of fine particle components adjusted by site-specific estimates of humidity.

The new IMPROVE equation takes into account the most recent review of the science<sup>9</sup> and it accounts for the effect of particle size distribution on light extinction efficiency of sulfate, nitrate, and organic carbon. It also adjusts the mass multiplier for organic carbon (particulate organic matter) by increasing it from 1.4 to 1.8. New terms are added to the equation to account for light extinction by sea salt and light absorption by gaseous nitrogen dioxide. Site-specific

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<sup>8</sup>The IMPROVE program is a cooperative measurement effort governed by a steering committee composed of representatives from Federal agencies (including representatives from EPA and the FLMS) and RPOs. The IMPROVE monitoring program was established in 1985 to aid the creation of Federal and State implementation plans for the protection of visibility in Class I areas. One of the objectives of IMPROVE is to identify chemical species and emission sources responsible for existing anthropogenic visibility impairment. The IMPROVE program has also been a key participant in visibility-related research, including the advancement of monitoring instrumentation, analysis techniques, visibility modeling, policy formulation and source attribution field studies.

<sup>9</sup>The science behind the revised IMPROVE equation is summarized in Virginia’s Appendix B and in numerous published papers. See for example: Hand, J.L., and Malm, W.C., 2006, *Review of the IMPROVE Equation for Estimating Ambient Light Extinction Coefficients - Final Report*. March 2006. Prepared for Interagency Monitoring of Protected Visual Environments (IMPROVE), Colorado State University, Cooperative Institute for Research in the Atmosphere, Fort Collins, Colorado.

[http://vista.cira.colostate.edu/improve/publications/GrayLit/016\\_IMPROVEeqReview/IMPROVEeqReview.htm](http://vista.cira.colostate.edu/improve/publications/GrayLit/016_IMPROVEeqReview/IMPROVEeqReview.htm); and Pitchford, Marc., 2006, *Natural Haze Levels II: Application of the New IMPROVE Algorithm to Natural Species Concentrations Estimates*. Final Report of the Natural Haze Levels II Committee to the RPO Monitoring/Data Analysis Workgroup. September 2006  
[http://vista.cira.colostate.edu/improve/Publications/GrayLit/029\\_NaturalCondII/naturalhazelevelsIIreport.ppt](http://vista.cira.colostate.edu/improve/Publications/GrayLit/029_NaturalCondII/naturalhazelevelsIIreport.ppt).



values are used for Rayleigh scattering (scattering of light due to atmospheric gases) to account for the site-specific effects of elevation and temperature. Separate relative humidity enhancement factors are used for small and large size distributions of ammonium sulfate and ammonium nitrate and for sea salt. The terms for the remaining contributors, elemental carbon (light-absorbing carbon), fine soil, and coarse mass terms, do not change between the original and new IMPROVE equations.

## **2. Estimating Baseline Conditions**

VADEQ estimated baseline visibility conditions at the Virginia Class I areas using available monitoring data from IMPROVE monitoring sites in Shenandoah National Park and James River Face Wilderness Area. As explained in section III.B, baseline visibility conditions are the same as current conditions for the first regional haze SIP. A five-year average of the 2000 to 2004 monitoring data was calculated for each of the 20 percent worst and 20 percent best visibility days at the Virginia Class I areas. IMPROVE data records for Shenandoah National Park and James River Face Wilderness Area for the period 2000 to 2004 meet the EPA requirements for data completeness. *See* pages 2-8 of EPA's 2003 Tracking Progress Guidance. The 20 percent best and worst days for the baseline period of 2000-2004 for Shenandoah National Park and James River Face Wilderness Area is provided at the following website: [http://www.metro4-sesarm.org/vistas/SesarmBext\\_20BW.htm](http://www.metro4-sesarm.org/vistas/SesarmBext_20BW.htm).

## **3. Summary of Baseline and Natural Conditions**

For the Virginia Class I areas, the baseline visibility on the 20 percent worst days is approximately 29 deciviews. Natural visibility in the area is predicted to be approximately 11

deciviews on the 20 percent worst days. The natural and baseline conditions for Virginia's Class I areas for both the 20 percent worst and best days are presented in Table 1 below.

**Table 1. Natural Background and Baseline Conditions for the Virginia Class I Areas**

<b>Class I area</b>	<b>Average for 20% Worst Days (dv)<sup>9</sup></b>	<b>Average for 20% Best Days (dv)</b>
<b>Natural Background Conditions</b>		
Shenandoah National Park	11.4	3.1
James River Face Wilderness Area	11.1	4.4
<b>Baseline Visibility Conditions (2000 -2004)</b>		
Shenandoah National Park	29.3	10.9
James River Face Wilderness Area	29.1	14.2

#### **4. Uniform Rate of Progress**

In setting the RPGs, Virginia considered the uniform rate of progress needed to reach natural visibility conditions by 2064 (“glidepath”) and the emission reduction measures needed to achieve that rate of progress over the period of the SIP to meet the requirements of 40 CFR 51.308(d)(1)(i)(B). As explained in EPA’s Reasonable Progress Guidance document, the uniform rate of progress is not a presumptive target, and RPGs may be greater, lesser, or equivalent to the glidepath.

The Commonwealth’s implementation plan presents two sets of graphs, one for the 20 percent best days, and one for the 20 percent worst days, for its Class I areas. Virginia constructed the graph for the worst days (i.e., the glidepath) in accordance with EPA’s 2003 Tracking Progress Guidance by plotting a straight graphical line from the baseline level of visibility impairment for 2000-2004 to the level of visibility conditions representing no anthropogenic impairment in 2064 for its area. For the best days, the graph includes a horizontal, straight line spanning from baseline conditions in 2004 out to 2018 to depict no degradation in visibility over the

implementation period of the SIP. Virginia's SIP shows that the Commonwealth's RPGs for its area provide for improvement in visibility for the 20 percent worst days over the period of the implementation plan and ensure no degradation in visibility for the 20 percent best days over the same period, in accordance with 40 CFR 51.308(d)(1).

For the Shenandoah National Park, the overall visibility improvement necessary to reach natural conditions is the difference between baseline visibility of 29.3 deciviews for the 20 percent worst days and natural conditions of 11.4 deciviews, i.e., 17.9 deciviews. Over the 60-year period from 2004 to 2064, this would require an average improvement of 0.298 deciviews per year to reach natural conditions. For the James River Face Wilderness Area, the overall visibility improvement necessary to reach natural conditions is the difference between baseline visibility of 29.1 deciviews for the 20 percent worst days and natural conditions of 11.1 deciviews, i.e., 18.0 deciviews. Over the 60-year period from 2004 to 2064, this would require an average improvement of 0.30 deciviews per year to reach natural conditions. Hence, for the 14-year period from 2004 to 2018, in order to achieve visibility improvements at least equivalent to the uniform rate of progress for the 20 percent worst days at Shenandoah National Park, Virginia would need to project at least 4.172 deciviews over the first implementation period (i.e.,  $0.298 \text{ deciviews} \times 14 \text{ years} = 4.172 \text{ deciviews}$ ) of visibility improvement from the 29.1 deciviews baseline in 2004, resulting in visibility levels at or below 24.928 deciviews in 2018. Virginia would need to project at least 4.2 deciviews improvement in order to achieve visibility improvements at least equivalent to the uniform rate of progress for the 20 percent worst days at James River Face Wilderness Area for the first implementation period. Virginia projects for Shenandoah National Park a 7.4 deciview improvement to visibility from the 29.3 deciview

baseline to 21.9 deciviews in 2018 for the 20 percent most impaired days, and a 2.2 deciview improvement to 8.7 deciviews from the baseline visibility of 10.9 deciviews for the 20 percent least impaired days. For James River Face Wilderness Area, Virginia projects a 6.7 deciview improvement to visibility from the 29.1 deciview baseline to 22.4 deciviews in 2018 for the 20 percent most impaired days, and a 1.8 deciview improvement to 12.4 deciviews from the baseline visibility of 14.2 deciviews for the 20 percent least impaired days.

### **C. Long-Term Strategy/Strategies**

As described in section III.E of this action, the LTS is a compilation of state-specific control measures relied on by the state for achieving its RPGs. Virginia's LTS for the first implementation period addresses the emissions reductions from Federal, state, and local controls that take effect in the Commonwealth from the end of the baseline period starting in 2004 until 2018. The Virginia LTS was developed by the Commonwealth, in coordination with the VISTAS RPO, through an evaluation of the following components: (1) identification of the emissions units within Virginia and in surrounding states that likely have the largest impacts currently on visibility at the Commonwealth's Class I areas; (2) estimation of emissions reductions for 2018 based on all controls required or expected under Federal and state regulations for the 2004-2018 period (including BART); (3) comparison of projected visibility improvement with the uniform rate of progress for the Commonwealth's Class I areas; and (4) application of the four statutory factors in the reasonable progress analysis for the identified emissions units to determine if additional reasonable controls were required.

CAIR is also an element of Virginia's LTS. CAIR rule revisions were approved into the Virginia SIP in 2007. Virginia opted to rely on CAIR emission reduction requirements to satisfy the BART requirements for SO<sub>2</sub> and NO<sub>x</sub> from EGUs. *See* 40 CFR 51.308(e)(4). Therefore, Virginia only required its BART-eligible EGUs to evaluate PM emissions for determining whether they are subject to BART, and, if applicable, for performing a BART control assessment. *See* section III.D. of this notice for further details. Additionally, as discussed below in section V.C.5, Virginia concluded that no additional controls beyond CAIR are reasonable for reasonable progress for its EGUs for this first implementation period. Prior to the remand of CAIR, EPA believed the Commonwealth's reliance on CAIR for specific BART and reasonable progress provisions affecting its EGUs was adequate, as detailed later in this notice. As explained in section IV of this notice, EPA proposes today to issue a limited approval and a proposed limited disapproval of the Commonwealth's regional haze SIP revisions that rely on CAIR requirements.

### **1. Emissions Inventory for 2018 with Federal and State Control Requirements**

The emissions inventory used in the regional haze technical analyses was developed by VISTAS with assistance from Virginia. The 2018 emissions inventory was developed by projecting 2002 emissions and applying reductions expected from Federal and state regulations affecting the emissions of VOC and the visibility-impairing pollutants NO<sub>x</sub>, PM, and SO<sub>2</sub>. The BART Guidelines direct states to exercise judgment in deciding whether VOC and NH<sub>3</sub> impair visibility in their Class I area(s). As discussed further in section V.C.3, VISTAS performed modeling sensitivity analyses, which demonstrated that anthropogenic emissions of VOC and NH<sub>3</sub> do not significantly impair visibility in the VISTAS region. Thus, while emissions inventories were

also developed for NH<sub>3</sub> and VOC, and applicable Federal VOC reductions were incorporated into Virginia's regional haze analyses, Virginia did not further evaluate NH<sub>3</sub> and VOC emissions sources for potential controls under BART or reasonable progress.

VISTAS developed emissions for five inventory source classifications: stationary point and area sources, off-road and on-road mobile sources, and biogenic sources. Stationary point sources are those sources that emit greater than a specified tonnage per year, depending on the pollutant, with data provided at the facility level. Stationary area sources are those sources whose individual emissions are relatively small, but due to the large number of these sources, the collective emissions from the source category could be significant. VISTAS estimated emissions on a countywide level for the inventory categories of: a) stationary area sources; b) off-road (or non-road) mobile sources (i.e., equipment that can move but does not use the roadways); and c) biogenic sources (which are natural sources of emissions, such as trees). On-road mobile source emissions are estimated by vehicle type and road type, and are summed to the countywide level.

There are many Federal and state control programs being implemented that VISTAS and Virginia anticipate will reduce emissions between the end of the baseline period and 2018. Emissions reductions from these control programs are projected to achieve substantial visibility improvement by 2018 in the Virginia Class I areas. The control programs relied upon by Virginia include CAIR; NO<sub>x</sub> SIP Call; North Carolina's Clean Smokestacks Act; Georgia multi-pollutant rule; consent decrees for Tampa Electric, Virginia Electric and Power Company, Gulf Power-Plant Crist, East Kentucky Power Cooperative (EKPC) – Cooper and Spurlock stations, and American Electric Power (AEP); NO<sub>x</sub> and/or VOC reductions from the control rules in 1-

hour ozone SIPs for Atlanta, Birmingham, and Northern Kentucky; North Carolina's NO<sub>x</sub> Reasonably Available Control Technology state rule for Philip Morris USA and Norandal USA in the Charlotte/Gastonia/Rock Hill 1997 8-hour ozone nonattainment area; Federal 2007 heavy duty diesel engine standards for on-road trucks and buses; federal Tier 2 tailpipe controls for on-road vehicles; federal large spark ignition and recreational vehicle controls; and EPA's non-road diesel rules. Controls from various federal Maximum Achievable Control Technology (MACT) rules were also utilized in the development of the 2018 emission inventory projections. These MACT rules include the industrial boiler/process heater MACT (referred to as "Industrial Boiler MACT"), the combustion turbine and reciprocating internal combustion engines MACTs, and the VOC 2-, 4-, 7-, and 10-year MACT standards.

On June 8, 2007, and effective July 30, 2007, the U.S. District Court of Appeals mandated the vacatur and remand of the Industrial Boiler MACT Rule.<sup>10</sup> This MACT was vacated since it was directly affected by the vacatur and remand of the Commercial and Industrial Solid Waste Incinerator Definition Rule. Notwithstanding the vacatur of the Industrial Boiler MACT Rule, the VISTAS states, including Virginia, decided to leave these controls in the modeling for their regional haze SIPs since it was believed at the time that by 2018, EPA would re-promulgate an industrial boiler MACT rule or the states would have addressed the issue through state-level case-by-case MACT reviews in accordance with section 112(j) of the CAA. This in fact was the case since EPA proposed a new Industrial Boiler MACT rule to address the vacatur on June 4, 2010 (75 FR 32006), and issued a final rule on March 21, 2011 (76 FR 15608). Thus, Virginia has sufficient time to assure the required controls are in place prior to the end of the first implementation period in 2018 since compliance with MACT limits for industrial boilers will

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<sup>10</sup> See *NRDC v. EPA*, 489F.3d 1250.

occur well before the 2018 RPGs for regional haze. Even though Virginia's modeling is based on the vacated Industrial Boiler MACT limits, Virginia's modeling conclusions are unlikely to be affected because the expected reductions due to the vacated rule were relatively small compared to the Commonwealth's total SO<sub>2</sub>, PM<sub>2.5</sub>, and coarse particulate matter (PM<sub>10</sub>) emissions in 2018 (i.e., 0.1 to 0.2 percent, depending on the pollutant, of the projected 2018 SO<sub>2</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub> inventory). Thus, EPA does not expect that differences between the vacated and final Industrial Boiler MACT emission limits would affect the adequacy of the existing Virginia regional haze SIP. If there is a need to address discrepancies between projected emissions reductions from the vacated Industrial Boiler MACT and the Industrial Boiler MACT finalized in March 2011, we expect Virginia to do so in their 5-year progress report. Below in Tables 2 and 3 are summaries of the 2002 baseline and 2018 estimated emission inventories for Virginia.

**Table 2. 2002 Emissions Inventory Summary for Virginia (tons per year)**

	<b>VOC</b>	<b>NH<sub>3</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>NO<sub>x</sub></b>	<b>SO<sub>2</sub></b>
<b>Point</b>	43,906	3,231	17,212	12,771	147,301	305,107
<b>Area</b>	174,851	43,975	239,096	45,292	51,753	105,982
<b>On-Road Mobile</b>	157,989	7,770	5,312	3,067	219,835	8,196
<b>Non-Road Mobile</b>	74,866	48	8,728	8,288	63,219	8,663
<b>Biogenics</b>	923,219	N/A	N/A	N/A	11,443	N/A
<b>Total</b>	<b>1,374,831</b>	<b>55,024</b>	<b>270,348</b>	<b>69,418</b>	<b>493,551</b>	<b>427,948</b>

\* N/A – not applicable



**Table 3. 2018 Emissions Inventory Summary for West Virginia (tons per year)**

	<b>VOC</b>	<b>NH<sub>3</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>NO<sub>x</sub></b>	<b>SO<sub>2</sub></b>
<b>Point</b>	54,200	4,226	27,662	23,570	122,019	183,164
<b>Area (includes fires)</b>	152,186	50,296	277,969	48,942	56,736	109,538
<b>On-Road Mobile</b>	55,992	9,653	2,813	1,404	57,192	949
<b>Non-road Mobile</b>	49,052	61	6,208	5,891	40,393	507
<b>Biogenics</b>	923,219	N/A	N/A	N/A	11,443	N/A
<b>Total</b>	<b>1,234,649</b>	<b>287,783</b>	<b>314,652</b>	<b>79,807</b>	<b>287,783</b>	<b>294,158</b>

\* N/A – not applicable

## **2. Modeling to Support the LTS and Determine Visibility Improvement for Uniform Rate of Progress**

VISTAS performed modeling for the regional haze LTS for the 10 southeastern states, including Virginia. The modeling analysis is a complex technical evaluation that began with selection of the modeling system. VISTAS used the following modeling system:

- **Meteorological Model:** The Pennsylvania State University/National Center for Atmospheric Research Mesoscale Meteorological Model is a nonhydrostatic, prognostic, meteorological model routinely used for urban- and regional- scale photochemical, PM<sub>2.5</sub>, and regional haze regulatory modeling studies.
- **Emissions Model:** The Sparse Matrix Operator Kernel Emissions modeling system is an emissions modeling system that generates hourly gridded speciated emission inputs of mobile, non-road mobile, area, point, fire, and biogenic emission sources for photochemical grid models.
- **Air Quality Model:** The EPA's Models-3/Community Multiscale Air Quality (CMAQ) modeling system is a photochemical grid model capable of addressing ozone, PM,

visibility, and acid deposition at a regional scale. The photochemical model selected for this study was CMAQ version 4.5. It was modified through VISTAS with a module for Secondary Organics Aerosols in an open and transparent manner that was also subjected to outside peer review.

CMAQ modeling of regional haze in the VISTAS region for 2002 and 2018 was carried out on a grid of 12x12 kilometer cells that covers the 10 VISTAS states (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia) and states adjacent to them. This grid is nested within a larger national CMAQ modeling grid of 36x36 kilometer grid cells that covers the continental United States, portions of Canada and Mexico, and portions of the Atlantic and Pacific Oceans along the east and west coasts.

Selection of a representative period of meteorology is crucial for evaluating baseline air quality conditions and projecting future changes in air quality due to changes in emissions of visibility-impairing pollutants. VISTAS conducted an in-depth analysis which resulted in the selection of the entire year of 2002 (January 1-December 31) as the best period of meteorology available for conducting the CMAQ modeling. The VISTAS states modeling was developed consistent with EPA's *Guidance on the Use of Models and Other Analyses for Demonstrating Attainment of Air Quality Goals for Ozone, PM<sub>2.5</sub>, and Regional Haze*, located at

<http://www.epa.gov/scram001/guidance/guide/final-03-pm-rh-guidance.pdf>, (EPA-454/B-07-002), April 2007, and EPA document, *Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations*, located at <http://www.epa.gov/ttnchie1/eidocs/eiguid/index.html>, EPA-454/R-05-001, August 2005, updated November 2005 ("EPA's Modeling Guidance").

VISTAS examined the model performance of the regional modeling for the areas of interest before determining whether the CMAQ model results were suitable for use in the regional haze assessment of the LTS and for use in the modeling assessment. The modeling assessment predicts future levels of emissions and visibility impairment used to support the LTS and to compare predicted, modeled visibility levels with those on the uniform rate of progress. In keeping with the objective of the CMAQ modeling platform, the air quality model performance was evaluated using graphical and statistical assessments based on measured ozone, fine particles, and acid deposition from various monitoring networks and databases for the 2002 base year. VISTAS used a diverse set of statistical parameters from the EPA's Modeling Guidance to stress and examine the model and modeling inputs. Once VISTAS determined the model performance to be acceptable, VISTAS used the model to assess the 2018 RPGs using the current and future year air quality modeling predictions, and compared the RPGs to the uniform rate of progress.

In accordance with 40 CFR 51.308(d)(3), the Commonwealth of Virginia provided the appropriate supporting documentation for all required analyses used to determine the Commonwealth's LTS. The technical analyses and modeling used to develop the glidepath and to support the LTS are consistent with EPA's RHR, and interim and final EPA Modeling Guidance. EPA accepts the VISTAS technical modeling to support the LTS and determine visibility improvement for the uniform rate of progress because the modeling system was chosen and simulated according to EPA Modeling Guidance. EPA agrees with the VISTAS model performance procedures and results, and that the CMAQ is an appropriate tool for the regional haze assessments for the Virginia LTS

and regional haze SIP, further EPA analysis can be found in the Technical Support Document for the Modeling Portions of the Commonwealth of Virginia's Regional Haze SIP.

### **3. Relative Contributions to Visibility Impairment: Pollutants, Source Categories, and Geographic Areas**

An important step toward identifying reasonable progress measures is to identify the key pollutants contributing to visibility impairment at each Class I area. To understand the relative benefit of further reducing emissions from different pollutants, source sectors, and geographic areas, VISTAS developed emission sensitivity model runs using CMAQ to evaluate visibility and air quality impacts from various groups of emissions and pollutant scenarios in the Class I areas on the 20 percent worst visibility days.

Regarding which pollutants are most significantly impacting visibility in the VISTAS region, VISTAS' contribution assessment, based on IMPROVE monitoring data, demonstrated that ammonium sulfate is the major contributor to PM<sub>2.5</sub> mass and visibility impairment at Class I areas in the VISTAS and neighboring states. On the 20 percent worst visibility days in 2000-2004, ammonium sulfate accounted for 69 to 74 percent of the calculated light extinction for all but one of the Class I areas in the VISTAS states. In particular, for Shenandoah National Park and James River Face Wilderness Area, sulfate levels on the 20 percent worst days account for 60-70 percent of the visibility impairment. However, occasionally particulate organic matter (POM) can be a significant contributor as well. On the very few 20 percent worst visibility days that occur outside of the April through September time period, either PM, ammonium nitrate, or a combination of POM and ammonium nitrate offer significant contributions towards visibility impairment in the James River Face Wilderness Area and Shenandoah National Park.

VISTAS grouped its 18 Class I areas into two types, either “coastal” or “inland” (sometimes referred to as “mountain”) sites, based on common/similar characteristics (e.g., terrain, geography, meteorology), to better represent variations in model sensitivity and performance within the VISTAS region, and to describe the common factors influencing visibility conditions in the two types of Class I areas. Virginia’s Class I areas is an “inland” area.

Results from VISTAS’ emission sensitivity analyses indicate that sulfate particles resulting from SO<sub>2</sub> emissions are the dominant contributor to visibility impairment on the 20 percent worst days at all Class I areas in VISTAS, including the Virginia areas. Virginia concluded that reducing SO<sub>2</sub> emissions from EGU and non-EGU point sources in the VISTAS states would have the greatest visibility benefits for the Virginia Class I areas. Because ammonium nitrate is a small contributor to PM<sub>2.5</sub> mass and visibility impairment on the 20 percent worst days at the inland Class I areas in VISTAS, which include Shenandoah National Park and James River Face Wilderness Area, the benefits of reducing NO<sub>x</sub> and NH<sub>3</sub> emissions at these sites are small.

The VISTAS sensitivity analyses show that VOC emissions from biogenic sources such as vegetation also contribute to visibility impairment. However, control of these biogenic sources of VOC would be extremely difficult, if not impossible. The anthropogenic sources of VOC emissions are minor compared to the biogenic sources. Therefore, controlling anthropogenic sources of VOC emissions would have little if any visibility benefits at the Class I areas in the VISTAS region, including Virginia. The sensitivity analyses also show that reducing primary

carbon from point sources, ground level sources, or fires is projected to have small to no visibility benefit at the VISTAS Class I areas.

Virginia considered the factors listed in 40 CFR 51.308(d)(3)(v) and in section III.E. of this action to develop its LTS as described below. Virginia, in conjunction with VISTAS, demonstrated in its SIP that elemental carbon (a product of highway and non-road diesel engines, agricultural burning, prescribed fires, and wildfires), fine soils (a product of construction activities and activities that generate fugitive dust), and ammonia are relatively minor contributors to visibility impairment at the Class I areas in Virginia. Virginia considered agricultural and forestry smoke management techniques to address visibility impacts from elemental carbon. The Virginia Department of Forestry (VDOF) has developed smoke management guidelines and these guidelines specifically note that Federal Class I air quality areas are sensitive areas that need special consideration if located near planned prescribed burns.

With regard to fine soils, the Commonwealth considered those activities that generate fugitive dust, including construction activities. With regard to all road and bridge construction activities, Virginia Department of Transportation (VDOT) uses Section 107.14(b)(2) of VDOT's 2007 Road and Bridge Specifications in all contracts. With regard to ammonia, the Commonwealth has chosen not to develop controls for ammonia emissions from Virginia sources in this first implementation period because of its relatively minor contribution to visibility impairment. EPA concurs with the Commonwealth's technical demonstration showing that elemental carbon, fine soils, and ammonia are not significant contributors to visibility in the Commonwealth's Class I area, and therefore, finds that Virginia has adequately satisfied 40 CFR 51.308(d)(3)(v).

The emissions sensitivity analyses conducted by VISTAS predict that reductions in SO<sub>2</sub> emissions from EGU and non-EGU industrial point sources will result in the greatest improvements in visibility in the Class I areas in the VISTAS region, more than any other visibility-impairing pollutant. Specific to Virginia, the VISTAS sensitivity analysis projects visibility benefits in Shenandoah National Park and James River Face Wilderness Area from SO<sub>2</sub> reductions from EGUs in nearby VISTAS states. Additional, smaller benefits are projected from SO<sub>2</sub> emissions reductions from non-utility industrial point sources. SO<sub>2</sub> emissions contributions to visibility impairment from other RPO regions are comparatively small in contrast to the VISTAS states' contributions, and, thus, controlling sources outside of the VISTAS region is predicted to provide less significant improvements in visibility in the Class I areas in VISTAS.

Taking the VISTAS sensitivity analyses results into consideration, Virginia concluded that reducing SO<sub>2</sub> emissions from EGU and non-EGU point sources in certain VISTAS states, states in the Midwest Regional Planning Organization and Mid-Atlantic/Northeast Visibility Union (MANE-VU) regions, and outside the modeling domain would have the greatest visibility benefits for the Virginia Class I areas. The Commonwealth chose to focus solely on evaluating certain SO<sub>2</sub> sources contributing to visibility impairment to the Commonwealth's Class I areas for additional emissions reductions for reasonable progress in this first implementation period (described in sections V.C.4. and V.C.5. of this notice). EPA agrees with the Commonwealth's analyses and conclusions used to determine the pollutants and source categories that most contribute to visibility impairment in the Class I area and finds the Commonwealth's approach to

focus on developing a LTS that includes largely additional measures for point sources of SO<sub>2</sub> emissions to be appropriate.

SO<sub>2</sub> sources for which it is demonstrated that no additional controls are reasonable in this current implementation period will not be exempted from future assessments for controls in subsequent implementation periods or, when appropriate, from the five-year periodic SIP reviews. In future implementation periods, additional controls on these SO<sub>2</sub> sources evaluated in the first implementation period may be determined to be reasonable, based on a reasonable progress control evaluation, for continued progress toward natural conditions for the 20 percent worst days and to avoid further degradation of the 20 percent best days. Similarly, in subsequent implementation periods, the Commonwealth may use different criteria for identifying sources for evaluation and may consider other pollutants as visibility conditions change over time.

#### **4. Procedure for Identifying Sources to Evaluate for Reasonable Progress Controls in Virginia and Surrounding Areas**

As discussed in section V.C.3. of this notice, through comprehensive evaluations by VISTAS and the Southern Appalachian Mountains Initiative (SAMI),<sup>11</sup> the VISTAS states concluded that sulfate particles resulting from SO<sub>2</sub> emissions account for the greatest portion of the regional haze affecting the Class I areas in VISTAS states, including those in Virginia. Utility and non-utility boilers are the main sources of SO<sub>2</sub> emissions within the southeastern United States.

VISTAS developed a methodology for Virginia, which enabled the Commonwealth to focus its

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<sup>11</sup> Prior to VISTAS, the southern states cooperated in a voluntary regional partnership “to identify and recommend reasonable measures to remedy existing and prevent future adverse effects from human-induced air pollution on the air quality related values of the Southern Appalachian Mountains.” States cooperated with FLMs, the EPA, industry, environmental organizations, and academia to complete a technical assessment of the impacts of acid deposition, ozone, and fine particles on sensitive resources in the Southern Appalachians. The SAMI Final Report was delivered in August 2002.



reasonable progress analysis on those geographic regions and source categories that impact visibility at its Class I areas. Recognizing that there was neither sufficient time nor adequate resources available to evaluate all emissions units within a given area of influence (AOI) around each Class I area that Virginia's sources impact, the Commonwealth established a threshold to determine which emissions units would be evaluated for reasonable progress control. In applying this methodology, VADEQ first calculated the fractional contribution to visibility impairment from all emissions units within the SO<sub>2</sub> AOI for its Class I areas, and those surrounding areas in other states potentially impacted by emissions from emissions units in Virginia. The Commonwealth then identified those emissions units with a contribution of one percent or more to the visibility impairment at that particular Class I area, and evaluated each of these units for control measures for reasonable progress, using the following four "reasonable progress factors" as required under 40 CFR 51.308(d)(1)(i)(A): (i) cost of compliance; (ii) time necessary for compliance; (iii) energy and non-air quality environmental impacts of compliance; and (iv) remaining useful life of the emissions unit.

Virginia's SO<sub>2</sub> AOI methodology captured 44.3 percent of the total point source SO<sub>2</sub> contribution to visibility impairment in the Shenandoah Class I area, and required an evaluation of 18 emissions units (5 of which are located in Virginia). The AOI methodology captured 49.9 percent of the total point source SO<sub>2</sub> contribution to visibility impairment in the James River Face Class I area, and required an evaluation of 12 emission units (8 of which are located in Virginia). Capturing a significantly greater percentage of the total contribution would involve an evaluation of many more emissions units that have substantially less impact. EPA believes the approach developed by VISTAS and implemented for the Class I areas in Virginia is a

reasonable methodology to prioritize the most significant contributors to regional haze and to identify sources to assess for reasonable progress control in the Commonwealth's Class I areas. The approach is consistent with EPA's Reasonable Progress Guidance. The technical approach of VISTAS and Virginia was objective and based on several analyses, which included a large universe of emissions units within and surrounding the Commonwealth of Virginia and all of the 18 VISTAS Class I areas. It also included an analysis of the VISTAS emissions units affecting nearby Class I areas surrounding the VISTAS states that are located in other RPOs' Class I areas.

## 5. Application of the Four CAA Factors in the Reasonable Progress Analysis

VADEQ identified 11 facilities in Virginia (see Table 4) with SO<sub>2</sub> emissions that were above the Commonwealth's minimum threshold for reasonable progress evaluation because they were modeled to fall within the sulfate AOI of any Class I area and have a one percent or greater contribution to the sulfate visibility impairment to at least one Class I area.<sup>12</sup>

**Table 4. Virginia Facilities Subject to Reasonable Progress Analysis**

<b>Facilities With a Unit(s) Subject to Reasonable Progress Analysis</b> International Paper Company, power boiler #7 MeadWestvaco, single stack for boilers #6-9 Roanoke Cement Company, kiln #5 Georgia Pacific – Big Island, boiler #4 Mohawk Industries, boiler #7 Celanese Acetate, LLC, boilers #1-7
<b>EGU Unit(s) Subject to Reasonable Progress Analysis</b> AEP-Clinch River, point ID 1, 2, 3 AEP-Glyn Lyn, point ID 3 Dominion-Bremo, point ID 1, 2 Dominion-Possum Point, point ID 5 Dominon-Chesterfield, point ID 6, 8

<sup>12</sup> See also Virginia's SIP, Appendix H, Table 7.7.4-2. Units within Virginia with Visibility Impairment Contributions of at least 1%.

The Commonwealth also included appropriate documentation in its SIP of the technical analysis it used to assess the need for and implementation of reasonable progress controls. VADEQ analyzed whether SO<sub>2</sub> controls should be required for the facilities subject to reasonable progress based on a consideration of the four factors set out in the CAA and EPA's regulations. For the limited purpose of evaluating the cost of compliance for the reasonable progress assessment in this first regional haze SIP for the non-EGUs, VADEQ concluded that it was not equitable to require non-EGUs to bear a greater economic burden than EGUs for a given control strategy. Using CAIR as a guide, VADEQ used a cost of \$2,000 per ton of SO<sub>2</sub> controlled or reduced as a threshold for cost effectiveness. Although the use of a specific threshold for assessing costs means that a state may not fully consider available emissions reduction measures above its threshold that would result in meaningful visibility improvement, EPA believes that the Virginia SIP still ensures reasonable progress. In proposing to approve Virginia's reasonable progress analysis, EPA is placing great weight on the fact that there is no indication in the SIP submittal that Virginia, as a result of using a specific cost effectiveness threshold, rejected potential reasonable progress measures that would have had a meaningful impact on visibility in its Class I areas. EPA notes that given the emissions reductions resulting from CAIR, Virginia's BART determinations, and the measures in nearby states, the visibility improvements projected for the affected Class I area are in excess of that needed to be on the uniform rate of progress glidepath. After the Commonwealth submitted its regional haze SIP on October 4, 2010, demonstrating that no additional controls on non-EGU sources identified in the AOI were reasonable because it was economically and/or technically infeasible, Virginia did additional analysis and found that a higher efficiency of control was reasonable at the MeadWestvaco Corporation. VADEQ submitted, on May 6, 2011, a permit to incorporate the additional 15 percent control for

MeadWestvaco Corporation for achieving additional reasonable progress into their regional haze SIP.

## **6. BART**

BART is an element of Virginia's LTS for the first implementation period. The BART evaluation process consists of three components: (a) an identification of all the BART-eligible sources, (b) an assessment of whether the BART-eligible sources are subject to BART and (c) a determination of the BART controls. These components, as addressed by VADEQ and VADEQ's findings, are discussed below.

### **a. BART-Eligible Sources**

The first phase of a BART evaluation is to identify all the BART-eligible sources within the Commonwealth's boundaries. VADEQ identified the BART-eligible sources in Virginia by utilizing the three eligibility criteria in the BART Guidelines (70 FR 39158) and EPA's regulations (40 CFR 51.301): (1) one or more emissions units at the facility fit within one of the 26 categories listed in the BART Guidelines; (2) the emissions units were not in operation prior to August 7, 1962, and was in existence on August 7, 1977; and (3) these units have the potential to emit 250 tons or more per year of any visibility-impairing pollutant.

The BART Guidelines also direct states to address SO<sub>2</sub>, NO<sub>x</sub> and direct PM (including both PM<sub>10</sub> and PM<sub>2.5</sub>) emissions as visibility-impairment pollutants, and to exercise judgment in determining whether VOC or ammonia emissions from a source impair visibility in an area. *See* 70 FR 39160. VISTAS modeling demonstrated that VOC from anthropogenic sources and

ammonia from point sources are not significant visibility-impairing pollutants in Virginia, as discussed in section V.C.3. of this action. VADEQ has determined, based on the VISTAS modeling, that ammonia emissions from the Commonwealth's point sources are not anticipated to cause or contribute significantly to any impairment of visibility in Class I areas and should be exempt for BART purposes.

## **b. BART-Subject Sources**

The second phase of the BART evaluation is to identify those BART-eligible sources that may reasonably be anticipated to cause or contribute to visibility impairment at any Class I area, i.e., those sources that are subject to BART. The BART Guidelines allow states to consider exempting some BART-eligible sources from further BART review because they may not reasonably be anticipated to cause or contribute to any visibility impairment in a Class I area. Consistent with the BART Guidelines, Virginia required each of its BART-eligible sources to develop and submit dispersion modeling to assess the extent of their contribution to visibility impairment at surrounding Class I areas.

## **1. Modeling Methodology**

The BART Guidelines allow states to use the CALPUFF<sup>13</sup> modeling system (CALPUFF) or another appropriate model to predict the visibility impacts from a single source on a Class I area, and therefore, to determine whether an individual source is anticipated to cause or contribute to

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<sup>13</sup>Note that our reference to CALPUFF encompasses the entire CALPUFF modeling system, which includes the CALMET, CALPUFF, and CALPOST models and other pre and post processors. The different versions of CALPUFF have corresponding versions of CALMET, CALPOST, etc. which may not be compatible with previous versions (e.g., the output from a newer version of CALMET may not be compatible with an older version of CALPUFF). The different versions of the CALPUFF modeling system are available from the model developer on the following website: <http://www.src.com/verio/download/download.htm>.

impairment of visibility in Class I areas, i.e., “is subject to BART.” The Guidelines state that EPA believes that CALPUFF is the best regulatory modeling application currently available for predicting a single source’s contribution to visibility impairment. *See* 70 FR 39162. Virginia, in coordination with VISTAS, used the CALPUFF modeling system to determine whether individual sources in Virginia were subject to or exempt from BART.

The BART Guidelines also recommend that states develop a modeling protocol for making individual source attributions and suggest that states may want to consult with EPA and their RPO to address any issues prior to modeling. The VISTAS states, including Virginia, developed a “Protocol for the Application of CALPUFF for BART Analyses.” Stakeholders, including EPA, FLMS, industrial sources, trade groups, and other interested parties, actively participated in the development and review of the VISTAS protocol. VISTAS developed a post-processing approach to use the new IMPROVE equation with the CALPUFF model results so that the BART analyses could consider both the old and new IMPROVE equations.

## **2. Contribution Threshold**

For states using modeling to determine the applicability of BART to single sources, the BART Guidelines note that the first step is to set a contribution threshold to assess whether the impact of a single source is sufficient to cause or contribute to visibility impairment at a Class I area. The BART Guidelines state that, “A single source that is responsible for a 1.0 deciview change or more should be considered to ‘cause’ visibility impairment.” The BART Guidelines also state that “the appropriate threshold for determining whether a source ‘contributes to visibility impairment’ may reasonably differ across states,” but, “[a]s a general matter, any threshold that

you use for determining whether a source ‘contributes’ to visibility impairment should not be higher than 0.5 deciviews.” The BART Guidelines affirm that states are free to use a lower threshold if they conclude that the location of a large number of BART-eligible sources in proximity of a Class I area justifies this approach.

Virginia used a contribution threshold of 0.5 deciview for determining which sources are subject to BART. Virginia concluded that, considering the results of the visibility impacts modeling conducted, a 0.5 deciview threshold was appropriate and a lower threshold was not warranted since the majority of the visibility impacts were well below 0.5 deciview and the sources are distributed across the Commonwealth. Also, even though several sources impacted each Class I area, the overall visibility impacts were low from the sources. As stated in the BART Guidelines, where a state concludes that a large number of these BART-eligible sources within proximity of a Class I area justify a lower threshold, it may warrant establishing a lower contribution threshold. *See* 70 FR 39161-39162, July 6, 2005. EPA is proposing to agree with Virginia that the overall impacts of these sources are not sufficient to warrant a lower contribution threshold and that a 0.5 deciview threshold was appropriate in this instance.

### **3. Identification of Sources Subject to BART**

Virginia initially identified 13 facilities with BART-eligible sources. Three of these are EGUs and ten are non-EGU sources. The Commonwealth subsequently determined that all three EGUs and seven of the non-EGU sources are exempt from being considered BART-subject. Table 5 identifies the 13 BART-eligible sources located in Virginia, and of these, lists the three non-EGU sources subject to BART.

**Table 5. Virginia BART-Eligible and Subject-to-BART Sources**

<b>Facilities With Unit(s) Subject to BART Analysis</b>
O-N Minerals Global Chemstone Operation MeadWestvaco Packaging Resource Group Georgia Pacific Corp Big Island Plant
<b>Facilities With Unit(s) Found Not Subject to BART</b>
<b><i>EGU CAIR and BART Modeling (PM only) Exempt Sources<sup>14</sup></i></b> Dominion Virginia Power – Chesterfield Dominion – Yorktown Dominion Virginia Power – Possum Point  <b><i>Non-EGU BART Modeling</i></b> Island Creek Coal Co./Virginia Pocahontas Mine Chemical Lime Company – Kimballton Plant Intermet Foundry Archer Creek Stone Container Corporation (D/B/A Smurfit Stone) Honeywell Nylon LLC - Hopewell International Paper Company Duke Energy

All but three of the non-EGU sources demonstrated that they are not subject to BART by showing through modeling less than a 0.5 deciview visibility impact at the affected Class I areas. This modeling involved assessing the visibility impact of emissions of NO<sub>x</sub>, SO<sub>2</sub>, and PM<sub>10</sub> as applicable to individual facilities. The three sources that were not able to model an exemption from BART are listed in Table 5 above.

For the three BART-eligible EGUs, Virginia relied upon CAIR emission limits for SO<sub>2</sub> and NO<sub>x</sub> to satisfy the obligation to comply with the BART requirements in accordance with 40 CFR 51.308(e)(4). Therefore, EGU sources only modeled PM<sub>10</sub> emissions, including all PM smaller

<sup>14</sup>EGUs were only evaluated for PM emissions. The Commonwealth relied on CAIR to satisfy BART for SO<sub>2</sub> and NO<sub>x</sub> for its EGUs subject to CAIR, in accordance with 40 CFR 51.308(e)(4). Thus, SO<sub>2</sub> and NO<sub>x</sub> were not analyzed.



than 10 microns (e.g., PM<sub>2.5</sub>). All of the EGUs demonstrated that their PM<sub>10</sub> emissions do not contribute to visibility impairment in any Class I area.

Prior to the remand of CAIR, the Commonwealth's reliance on CAIR to satisfy BART for NO<sub>x</sub> and SO<sub>2</sub> for affected CAIR EGUs was fully approvable and in accordance with 40 CFR 51.308(e)(4). However, as explained in section IV of this notice, given the status of CAIR, EPA is proposing to find that Virginia may not rely on CAIR to provide reductions to satisfy the BART requirements of the regional haze program. Although CAIR is in force once again following the court's order staying the Transport Rule, it will not remain in effect indefinitely. EPA proposes today to issue a limited approval and a limited disapproval of the Commonwealth's regional haze SIP revision.

### **c. BART Determinations for non-EGU Sources**

In accordance with the BART Guidelines, to determine the level of control that represents BART for each of the three non-EGU BART-subject sources, the state first reviewed existing controls on these units to assess whether these constituted the best controls currently available, then identified what other technically feasible controls are available, and finally, evaluated the technically feasible controls using the five BART statutory factors. Virginia's evaluations and conclusions, and EPA's assessment, are summarized below.

The O-N Mineral permit was submitted as a SIP revision by VADEQ on January 14, 2010 and an amendment was submitted on November 19, 2010, to establish BART emission limits, monitoring, and record keeping requirements for the O-N Mineral Facility. VADEQ determined

that BART is the permanent shutdown of the calcimatic kiln (U-12) and limits for SO<sub>2</sub> are 0.29 pounds per tons stone feed (lbs/tsf) and 14.7 pounds per hour (lbs/hr), NO<sub>x</sub> limits are 1.74 lbs/tsf and 87.0 lbs/hr with the average of a 3 hour sampling period, and PM limits are 0.12lbs/tsf and 6.0lbs/hr with the average of a 3 hour sampling period for the rotary kiln (U-5). The compliance date for these BART controls for O-N Minerals is 180 days after August 6, 2010. Once the BART limits are established, the source is then required by 40 CFR 51.308(e)(1)(v) to maintain the control equipment required and establish procedures to ensure such equipment is properly operated and maintained.

The MeadWestvaco permit was submitted by VADEQ on March 6, 2009. MeadWestvaco has four units that are BART-subject. These units are two power boilers, number 9 and 10, recovery furnace number 1, and smelt dissolving tank number 1. The number 9 boiler limit is a combined emission limit for boilers number 6 through 9 because all four boilers emit through a single stack. The limits for nitrogen dioxide (NO<sub>2</sub>) are 8242.1 lbs/hr and 1,060 tons per year (tpy), for SO<sub>2</sub> the limits are 1,831 lbs/hr and 8,020 tpy, and for PM<sub>10</sub> the limits are 166.4 lbs/hr and 728.9 tpy. The emission limits for power boiler number 10 are a fuel restriction of at least 90 percent natural gas utilization for SO<sub>2</sub>, 66.0 lbs/hr of NO<sub>x</sub>, and 2.51 lbs/hr of PM. The emission limits for recovery furnace number 1 for SO<sub>2</sub> are 713.7 lbs/hr, for NO<sub>x</sub> the limits are 211.2 lbs/hr, for PM the emission limits are 150.0 lbs/hr, 85.0 lbs/hr on an annual average, and 350 tpy, and for PM<sub>10</sub> the emission limits are 103.8 lbs/hr, 58.8 lbs/hr on an annual average and 242 tpy. The emission limits for the smelt dissolving tank for SO<sub>2</sub> are 14.8 lbs/hr and 64.8 tpy, for PM the limits are 14.1 lbs/hr and 58.0 tpy, and for PM<sub>10</sub> the limits are 12.6 lbs/hr and 51.9 tpy. As a part of the BART determination process Virginia determined that MeadWestvaco could get an

additional 15 percent SO<sub>2</sub> reduction, which would be an additional RPG reduction. The new SO<sub>2</sub> limit for MeadWestvaco boilers number 6 through 9 submitted by VADEQ on May 6, 2011 is 1,556 lbs/hr and 6,817 tpy. MeadWestvaco must comply with the RPG limit by January 1, 2016.

The Georgia Pacific – Big Island permit was submitted by VADEQ on July 17, 2008. Georgia Pacific – Big Island has two power boilers (numbers 4 and 5) that are BART-subject. The emission limits for power boiler number 4 for SO<sub>2</sub> are 50 lbs/hr and 219 tpy, the limits for NO<sub>x</sub> are 169 lbs/hr and 740.2 tpy, and the limits for PM<sub>10</sub> are 0.07 pounds per one million British thermal unit (lbs/MMBtu), 19.9 lbs/hr and 87 tpy. The effective date for the emission limits of power boiler number 4 is June 12, 2008 for NO<sub>x</sub> and PM<sub>10</sub>. The effective date for the SO<sub>2</sub> emission limits of power boiler number 4 is 180 days after scrubber is installed for the hourly limit and July 1, 2013 or 13 months after the scrubber performance test for the annual limit. The emission limits for power boiler number 5 for SO<sub>2</sub> are 485.1 lbs/hr and 374.0 tpy, the limits for NO<sub>x</sub> are 139.3 lbs/hr and 610.1 tpy, and the limits for PM<sub>10</sub> are 0.07 lbs/MMBtu, 23.7 lbs/hr and 103.9 tpy. The effective date for the emission limits of power boiler number 5 is 12 months after June, 12, 2008.

EPA agrees with VADEQ's analyses and conclusions for the BART emission units located at the O-N Mineral, MeadWestvaco, and Georgia Pacific – Big Island facilities. EPA has reviewed the Virginia analyses and concluded they were conducted in a manner that is consistent with EPA's BART Guidelines. EPA has determined that Virginia's submittals meet the requirements of section 169A(g)(2) of the CAA to consider available technology, the cost of compliance, the energy and nonair quality environmental impacts of compliance, any pollution control equipment

in use at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology.

Therefore, the conclusions reflect a reasonable application of EPA's guidance to these sources.

The BART determinations for each of the facilities discussed above and the resulting BART emission limits were adopted by Virginia into its regional haze SIP. VADEQ incorporated the BART emission limits into state operating permits, and submitted these permits individually, as part the Commonwealth's regional haze SIP. The BART units in Virginia (O-N Minerals, MeadWestvaco, and Georgia Pacific – Big Island) are required to comply with these emission limits no later than five years after publication in the Federal Register of EPA's final approval of the Virginia regional haze SIP, to allow time for needed operational changes.

## **7. RPGs**

The RHR at 40 CFR 51.308(d)(1) requires states to establish RPGs for each Class I area within the state (expressed in deciviews) that provide for reasonable progress towards achieving natural visibility. VISTAS modeled visibility improvements under existing Federal and state regulations for the period 2004-2018, and additional control measures which the VISTAS states planned to implement in the first implementation period. At the time of VISTAS modeling, some of the other states with sources potentially impacting visibility at the Virginia Class I areas had not yet made final control determinations for BART and/or reasonable progress, and thus, these controls were not included in the modeling submitted by Virginia. Any controls resulting from those determinations will provide additional emissions reductions and resulting visibility improvement, which give further assurances that Virginia will achieve its RPGs. This modeling demonstrates

that the 2018 base control scenario provides for an improvement in visibility better than the uniform rate of progress for the Virginia Class I areas for the most impaired days over the period of the implementation plan and ensures no degradation in visibility for the least impaired days over the same period.

As shown in Table 6 below, Virginia's 2018 RPG for the 20 percent worst days provides greater visibility improvement by 2018 than the uniform rate of progress for the Commonwealth's Class I areas (i.e., 26.64 deciviews in 2018). Also, the RPG for the 20 percent best days provides greater visibility improvement by 2018 than current best day conditions. The modeling supporting the analysis of these RPGs is consistent with EPA guidance prior to the CAIR remand. The regional haze provisions specify that a state may not adopt a RPG that represents less visibility improvement than is expected to result from other CAA requirements during the implementation period. *See* 40 CFR 51.308(d)(1)(vi). Therefore, the CAIR states with Class I areas, like Virginia, took into account emissions reductions anticipated from CAIR in determining their 2018 RPGs.<sup>15</sup>

**Table 6. Virginia 2018 RPGs (in deciviews)**

Class I Area	Baseline Visibility - 20% Worst Days	2018 RPG - 20% Worst Days (Improvement from Baseline)	Uniform Rate of Progress at 2018 - 20% Worst Days (Improvement from Baseline)	Baseline Visibility - 20% Best Days	2018 RPG - 20% Best Days (Improvement from Baseline)
Shenandoah National Park	<b>29.3</b>	<b>21.9 (7.4)</b>	<b>25.1 (4.2)</b>	<b>10.9</b>	<b>8.7 (2.2)</b>
James River	<b>29.1</b>	<b>22.4</b>	<b>24.9</b>	<b>14.2</b>	<b>12.4</b>

<sup>15</sup> Many of the CAIR states without Class I areas similarly relied on CAIR emission reductions within the state to address some or all of their contribution to visibility impairment in other states' Class I areas, which the impacted Class I area state(s) used to set the RPGs for their Class I area(s). Certain surrounding non-CAIR states also relied on reductions due to CAIR in nearby states to develop their regional haze SIP submittals.

Face Wilderness Area		(6.7)	(4.2)		(1.8)
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The RPGs for the Class I areas in Virginia are based on modeled projections of future conditions that were developed using the best available information at the time the analysis was done.

These projections can be expected to change as additional information regarding future conditions becomes available. For example, new sources may be built, existing sources may shut down or modify production in response to changed economic circumstances, and facilities may change their emission characteristics as they install control equipment to comply with new rules. It would be both impractical and resource-intensive to require a state to continually revise its RPGs every time an event affecting these future projections changed.

Virginia submitted a revision on May 6, 2011 requiring an additional reduction from MeadWestvaco for reasonable progress. The RPG is an additional 15 percent control of SO<sub>2</sub> beyond the BART emission limit from boilers number 6 through 9. This additional reduction of SO<sub>2</sub> is required to be implemented by January 1, 2016. The revised emission limits have been incorporated into the Commonwealth's operating permit.

EPA recognized the problems of a rigid requirement to meet a long-term goal based on modeled projections of future visibility conditions, and addressed the uncertainties associated with RPGs in several ways. EPA made clear in the RHR that the RPG is not a mandatory standard that must be achieved by a particular date. *See* 64 FR 35733. At the same time, EPA established a requirement for a midcourse review and, if necessary, correction of the states' regional haze plans. *See* 40 CFR 52.308(g). In particular, the RHR calls for a five-year progress review after

submittal of the initial regional haze plan. The purpose of this progress review is to assess the effectiveness of emission management strategies in meeting the RPG and to provide an assessment of whether current implementation strategies are sufficient for the state or affected states to meet their RPGs. If a state concludes, based on its assessment, that the RPGs for a Class I area will not be met, the RHR requires the state to take appropriate action. *See* 40 CFR 52.308(h). The nature of the appropriate action will depend on the basis for the state's conclusion that the current strategies are insufficient to meet the RPGs. Virginia specifically committed to follow this process in the LTS portion of its submittal.

EPA anticipates that since the Transport Rule will result in greater emission reductions overall than CAIR, implementation of the Transport Rule will also result in similar or better improvements in visibility than predicted from CAIR. By the time Virginia is required to undertake its five-year progress review, however, it is likely that the impact of the Transport Rule and other measures on visibility can be meaningfully assessed. If meeting the RPGs at its Class I Federal area is in jeopardy, the Commonwealth will be required to address this circumstance in its five-year review. Accordingly, EPA proposes to approve Virginia's RPGs for the Shenandoah National Park and James River Face Wilderness Area.

#### **D. Coordination of RAVI and Regional Haze Requirements**

EPA's visibility regulations direct states to coordinate their RAVI LTS and monitoring provisions with those for regional haze, as explained in sections III.F and III.G. of this action. Under EPA's RAVI regulations, the RAVI portion of a state SIP must address any integral vistas identified by the FLMs pursuant to 40 CFR 51.304. An *integral vista* is defined in 40 CFR

51.301 as a “view perceived from within the mandatory Class I Federal area of a specific landmark or panorama located outside the boundary of the mandatory Class I Federal area.” Visibility in any mandatory Class I Federal area includes any integral vista associated with that area. The FLMs did not identify any integral vistas in Virginia. In addition, the Class I area in Virginia is neither experiencing RAVI, nor are any of its sources affected by the RAVI provisions. Thus, the October 4, 2010, Virginia regional haze SIP submittal does not explicitly address the two requirements regarding coordination of the regional haze with the RAVI LTS and monitoring provisions. However, Virginia previously made a commitment to address RAVI should the FLM certify visibility impairment from an individual source. EPA finds that this regional haze submittal appropriately supplements and augments Virginia’s RAVI visibility provisions to address regional haze by updating the monitoring and LTS provisions as summarized below in this section.

In the October 4, 2010 submittal, VADEQ updated its visibility monitoring program and developed a LTS to address regional haze. Also in this submittal, VADEQ affirmed its commitment to complete items required in the future under EPA’s RHR. Specifically, VADEQ made a commitment to review and revise its regional haze implementation plan and submit a plan revision to EPA by July 31, 2018, and every 10 years thereafter. *See* 40 CFR 51.308(f). In accordance with the requirements listed in 40 CFR 51.308(g) of EPA’s regional haze regulations and 40 CFR 51.306(c) of the RAVI LTS regulations, VADEQ made a commitment to submit a report to EPA on progress towards the RPGs for each mandatory Class I area located within Virginia and in each mandatory Class I area located outside Virginia which may be affected by emissions from within Virginia. The progress report is required to be in the form of a SIP



revision and is due every five years following the initial submittal of the regional haze SIP. Consistent with EPA's monitoring regulations for RAVI and regional haze, Virginia will rely on the IMPROVE network for compliance purposes, in addition to any RAVI monitoring that may be needed in the future. *See* 40 CFR 51.305, 40 CFR 51.308(d)(4). Also, the Virginia new source review (NSR) rules, previously approved in the Commonwealth's SIP, continue to provide a framework for review and coordination with the FLMs on new sources which may have an adverse impact on visibility in either form (i.e., RAVI and/or regional haze) in any Class I Federal area. The Virginia SIP contains a plan addressing the associated monitoring and reporting requirements. *See* 53 FR 26256, July 12, 1988. Although EPA's approval of this plan neglected to remove the Federally promulgated provisions set forth in 40 CFR 52.936, EPA intends to correct this omission in a separate future rulemaking.

#### **E. Monitoring Strategy and Other Implementation Plan Requirements**

The primary monitoring network for regional haze in Virginia is the IMPROVE network. As discussed in section V.B.2. of this notice, there are currently two IMPROVE sites in Virginia, which serve as the monitoring sites for Shenandoah National Park and James River Face Wilderness Area in Virginia.

IMPROVE monitoring data from 2000-2004 serves as the baseline for the regional haze program, and is relied upon in the Virginia regional haze submittal. In the submittal, Virginia states its intention to rely on the IMPROVE network for complying with the regional haze monitoring requirement in EPA's RHR for the current and future regional haze implementation periods. Data produced by the IMPROVE monitoring network will be used nearly continuously

for preparing the five-year progress reports and the 10-year SIP revisions, each of which relies on analysis of the preceding five years of data. The Visibility Information Exchange Web System (VIEWS) web site has been maintained by VISTAS and the other RPOs to provide ready access to the IMPROVE data and data analysis tools. Virginia is encouraging VISTAS and the other RPOs to maintain the VIEWS or a similar data management system to facilitate analysis of the IMPROVE data.

In addition to the IMPROVE measurements, the FLMs perform long-term limited monitoring that provides additional insight into progress toward regional haze goals. Also, VADEQ operates a comprehensive PM<sub>2.5</sub> network of filter-based Federal reference method monitors, continuous mass monitors, and filter-based speciated monitors.

## **F. Consultation with States and FLMs**

### **1. Consultation with Other States**

In December 2006 and in May 2007, the State Air Directors from the VISTAS states held formal interstate consultation meetings. The purpose of the meetings was to discuss the methodology proposed by VISTAS for identifying sources to evaluate for reasonable progress. The states invited FLM and EPA representatives to participate and to provide additional feedback. The Directors discussed the results of analyses showing contributions to visibility impairment from states to each of the Class I areas in the VISTAS region. VADEQ has evaluated the impact of sources on Class I areas in neighboring states. The state in which a Class I area is located is responsible for determining which sources, both inside and outside of that state, to evaluate for reasonable progress controls. Because many of these states had not yet defined their criteria for

identifying sources to evaluate for reasonable progress, VADEQ applied its AOI methodology to identify sources in the Commonwealth that have emissions units with impacts large enough to potentially warrant further evaluation and analysis. The Commonwealth identified five emissions units in Virginia with a contribution of one percent or more to the visibility impairment at Class I areas in neighboring states.

Regarding the impact of sources outside of the Commonwealth on the Class I areas in Virginia, VADEQ sent letters to Maryland, North Carolina, and West Virginia pertaining to emissions units within these states that the Commonwealth believes contributed one percent or higher to visibility impairment in the Virginia Class I areas. Virginia identified three facilities in Maryland (Westvaco/Luke Plant, Eastalco Aluminum, and Mirant Mid-Atlantic), one facility in North Carolina (Duke Energy Dan River Steam Station), and four facilities in West Virginia (Capital Cement Corporation, Dominion-Mount Storm, Monogahela-Harrison, and Appalachian Power-John E. Amos) as meeting its SO<sub>2</sub> AOI contribution threshold. VADEQ opted not to request any additional emissions reductions for reasonable progress from North Carolina during the first implementation period. Responses from the neighboring states can be found in Virginia's Appendix J of the October 4, 2010 submittal. Any controls resulting from those will provide additional emissions reductions and resulting visibility improvement, which gives further assurances that Virginia will achieve its RPGs. Therefore, to be conservative, Virginia opted not to rely on any additional emissions reductions from sources located outside the Commonwealth's boundaries beyond those already identified in Virginia's regional haze SIP submittal and as discussed in section V.C.1. (Federal and state controls in place by 2018) of this action.

Virginia received letters from the MANE-VU RPO States of New Jersey and New Hampshire in the Spring of 2007, stating that they wish to have further consultation with Virginia about visibility impairment to Class I areas in those states. MANE-VU met with VISTAS states on August 20, 2007 in Atlanta, Georgia and presented their “asks” which are the RPGs for the MANE-VU Class I Areas. As part of its “asks,” the MANE-VU states identified 167 EGU stacks that impact their Class I areas the most requested states to implement a 90 percent control efficiency for SO<sub>2</sub> on those stacks. The MANE-VU states identified 10 EGU stacks in Virginia as a part of the 167 EGU stacks. It also requested a control strategy to provide a 28 percent reduction in SO<sub>2</sub> emissions from sources other than EGUs that would be equivalent to MANE-VU’s proposed low sulfur fuel oil strategy. Of the Virginia EGUs identified by MANE-VU, 82 percent of those sources have existing SO<sub>2</sub> controls or will have SO<sub>2</sub> controls by 2018 or sooner.

VISTAS modeling showed that no Virginia stack contributes more than 1 percent or more to the calculated visibility impairment to the Brigantine Class I area in contrast to the MANE-VU modeling. Virginia’s non-EGUs are predicted to emit 57,790 tons of SO<sub>2</sub> in 2018. MANE-VU requested a 28 percent reduction in these emissions, or approximately 16,181 tons. Two EGUs in Virginia not on the MANE-VU listing of 167 stacks already have enforceable conditions in place that will provide reductions of 16,900 tons of SO<sub>2</sub> satisfying the non-EGU reductions requested by MANE-VU. VADEQ believes that these emissions reductions satisfy MANE-VU’s request.

EPA finds that Virginia has adequately addressed the consultation requirements in the RHR and appropriately documented its consultation with other states in its SIP submittal. *See* Appendix J of Virginia's October 4, 2010 submittal for state letters and the Commonwealth's responses and Appendix D for specific emission inventories.

## **2. Consultation with the FLMs**

Through the VISTAS RPO, Virginia and the nine other member states worked extensively with the FLMs from the U.S. Departments of the Interior and Agriculture to develop technical analyses that support the regional haze SIPs for the VISTAS states. VADEQ also provided a draft plan dated October 1, 2007, to the FLMs (and EPA) for review. Appendix J of the Virginia regional haze SIP submittal includes the comment letters from the FLMs, which indicate that the FLMs appear to be generally supportive of the Commonwealth's regional haze SIP, and were pleased with the technical information summarized in the regional haze SIP narrative. The FLM comments mainly suggested that Virginia insert language to further expand and/or clarify certain information. For example, the FLMs requested that VADEQ discuss the linkage between the LTS and the Commonwealth's NSR/PSD program in the SIP narrative. Additionally, the FLMs asked VADEQ to reiterate statements in the appendices regarding the conclusions of interstate consultation discussions in the SIP narrative. The FLMs also suggested that emission inventory data from 2002 in the SIP narrative be put with the projection data for 2009 and 2018 to aid the reader with understanding the anticipated effects of Virginia's LTS. To address the requirement for continuing consultation procedures with the FLMs under 40 CFR 51.308(i)(4), VADEQ made a commitment in the SIP to ongoing consultation with the FLMs on regional haze issues throughout implementation of its plan, including annual discussions. VADEQ also affirms in the

SIP that FLM consultation is required for those sources subject to the Commonwealth's NSR regulations.

#### **G. Periodic SIP Revisions and Five-Year Progress Reports**

As also summarized in section V.D. of this action, consistent with 40 CFR 51.308(g), VADEQ affirmed its commitment to submitting a progress report in the form of a SIP revision to EPA every five years following this initial submittal of the Virginia regional haze SIP. The report will evaluate the progress made towards the RPGs for the mandatory Class I areas located within Virginia and in each mandatory Class I area located outside Virginia that may be affected by emissions from within Virginia. Virginia also offered recommendations for several technical improvements that, as funding allows, can support the Commonwealth's next LTS. These recommendations are discussed in detail in the Virginia submittal in Appendix K. If another state's regional haze SIP identifies that Virginia's SIP needs to be supplemented or modified, and if, after appropriate consultation Virginia agrees, today's action may be revisited, or additional information and/or changes will be addressed in the five-year progress report SIP revision.

#### **VI. General Information Pertaining to SIP Submittals from the Commonwealth of Virginia**

In 1995, Virginia adopted legislation that provides, subject to certain conditions, for an environmental assessment (audit) "privilege" for voluntary compliance evaluations performed by a regulated entity. The legislation further addresses the relative burden of proof for parties either asserting the privilege or seeking disclosure of documents for which the privilege is claimed. Virginia's legislation also provides, subject to certain conditions, for a penalty waiver for

violations of environmental laws when a regulated entity discovers such violations pursuant to a voluntary compliance evaluation and voluntarily discloses such violations to the Commonwealth and takes prompt and appropriate measures to remedy the violations. Virginia's Voluntary Environmental Assessment Privilege Law, Va. Code Sec. 10.1-1198, provides a privilege that protects from disclosure documents and information about the content of those documents that are the product of a voluntary environmental assessment. The Privilege Law does not extend to documents or information (1) that are generated or developed before the commencement of a voluntary environmental assessment; (2) that are prepared independently of the assessment process; (3) that demonstrate a clear, imminent and substantial danger to the public health or environment; or (4) that are required by law.

On January 12, 1998, the Commonwealth of Virginia Office of the Attorney General provided a legal opinion that states that the Privilege law, Va. Code Sec. 10.1-1198, precludes granting a privilege to documents and information "required by law," including documents and information "required by Federal law to maintain program delegation, authorization or approval," since Virginia must "enforce Federally authorized environmental programs in a manner that is no less stringent than their Federal counterparts. . . ." The opinion concludes that "[r]egarding § 10.1-1198, therefore, documents or other information needed for civil or criminal enforcement under one of these programs could not be privileged because such documents and information are essential to pursuing enforcement in a manner required by Federal law to maintain program delegation, authorization or approval."

Virginia's Immunity law, Va. Code Sec. 10.1-1199, provides that "[t]o the extent consistent with requirements imposed by Federal law," any person making a voluntary disclosure of information

to a state agency regarding a violation of an environmental statute, regulation, permit, or administrative order is granted immunity from administrative or civil penalty. The Attorney General's January 12, 1998 opinion states that the quoted language renders this statute inapplicable to enforcement of any Federally authorized programs, since "no immunity could be afforded from administrative, civil, or criminal penalties because granting such immunity would not be consistent with Federal law, which is one of the criteria for immunity."

Therefore, EPA has determined that Virginia's Privilege and Immunity statutes will not preclude the Commonwealth from enforcing its program consistent with the Federal requirements. In any event, because EPA has also determined that a state audit privilege and immunity law can affect only state enforcement and cannot have any impact on Federal enforcement authorities, EPA may at any time invoke its authority under the CAA, including, for example, sections 113, 167, 205, 211 or 213, to enforce the requirements or prohibitions of the state plan, independently of any state enforcement effort. In addition, citizen enforcement under section 304 of the CAA is likewise unaffected by this, or any, state audit privilege or immunity law.

## **VII. What Action is EPA Taking?**

EPA is proposing a limited approval and a limited disapproval of the revisions to the Virginia SIP submitted by the Commonwealth of Virginia on July 17, 2008, March 6, 2009, January 14, 2010, October 4, 2010, November 19, 2010, and May 6, 2011, as meeting some of the applicable regional haze requirements as set forth in sections 169A and 169B of the CAA and in 40 CFR 51.300-308, as described previously in this action. The limited disapproval is only in regard to the SIP revisions' reliance on CAIR as an alternative to BART for SO<sub>2</sub> and NO<sub>x</sub>



emissions from EGUs and as a part of its long-term strategy. EPA has proposed in a separate notice a FIP that would correct this deficiency in Virginia’s regional haze SIP by indicating that the Transport Rule is the alternative to this portion of the BART requirement. EPA is also proposing to find that the revisions submitted by Virginia meet the applicable visibility related requirements of CAA section 110(a)(2) including, but not limited to 110(a)(2)(D)(i)(II) and 110(a)(2)(J), relating to visibility protection for the 1997 8-Hour Ozone NAAQS and the 1997 and 2006 PM<sub>2.5</sub> NAAQS.

## **VIII. Statutory and Executive Order Reviews**

### **A. Executive Order 12866, Regulatory Planning and Review**

The Office of Management and Budget (OMB) has exempted this regulatory action from Executive Order 12866, entitled “Regulatory Planning and Review.”

### **B. Paperwork Reduction Act**

Under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq., OMB must approve all “collections of information” by EPA. The Act defines “collection of information” as a requirement for answers to \* \* \* identical reporting or recordkeeping requirements imposed on ten or more persons \* \* \*. 44 U.S.C. 3502(3)(A). The Paperwork Reduction Act does not apply to this action.

### **C. Regulatory Flexibility Act (RFA)**

The RFA generally requires an agency to conduct a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small

entities include small businesses, small not-for-profit enterprises, and small governmental jurisdictions.

This rule will not have a significant impact on a substantial number of small entities because SIP approvals under section 110 and subchapter I, part D of the CAA do not create any new requirements but simply approve requirements that the State is already imposing. Therefore, because the Federal SIP approval does not create any new requirements, I certify that this action will not have a significant economic impact on a substantial number of small entities.

Moreover, due to the nature of the Federal-state relationship under the CAA, preparation of a flexibility analysis would constitute Federal inquiry into the economic reasonableness of state action. The CAA forbids EPA to base its actions concerning SIPs on such grounds. *Union Electric Co., v. EPA*, 427 U.S. 246, 255-66 (1976); 42 U.S.C. 7410(a)(2).

#### **D. Unfunded Mandates Reform Act**

Under sections 202 of the Unfunded Mandates Reform Act of 1995 ("Unfunded Mandates Act"), signed into law on March 22, 1995, EPA must prepare a budgetary impact statement to accompany any proposed or final rule that includes a Federal mandate that may result in estimated costs to State, local, or tribal governments in the aggregate, or to the private sector, of \$100 million or more. Under section 205, EPA must select the most cost-effective and least burdensome alternative that achieves the objectives of the rule and is consistent with statutory requirements. Section 203 requires EPA to establish a plan for informing and advising any small governments that may be significantly or uniquely impacted by the rule.

EPA has determined that today's proposal does not include a Federal mandate that may result in estimated costs of \$100 million or more to either state, local, or tribal governments in the aggregate, or to the private sector. This Federal action proposes to approve pre-existing requirements under State or local law, and imposes no new requirements. Accordingly, no additional costs to State, local, or tribal governments, or to the private sector, result from this action.

#### **E. Executive Order 13132, Federalism**

Executive Order 13132, entitled *Federalism* (64 FR 43255, August 10, 1999) revokes and replaces Executive Orders 12612 (Federalism) and 12875 (Enhancing the Intergovernmental Partnership). Executive Order 13132 requires EPA to develop an accountable process to ensure “meaningful and timely input by State and local officials in the development of regulatory policies that have Federalism implications.” “Policies that have Federalism implications” is defined in the Executive Order to include regulations that have “substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.” Under Executive Order 13132, EPA may not issue a regulation that has Federalism implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by state and local governments, or EPA consults with state and local officials early in the process of developing the proposed regulation. EPA also may not issue a regulation that has Federalism implications and that preempts state law unless the Agency consults with state and local officials early in the process of developing the proposed regulation.

This rule will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132, because it merely approves a state rule implementing a Federal standard, and does not alter the relationship or the distribution of power and responsibilities established in the CAA. Thus, the requirements of section 6 of the Executive Order do not apply to this rule.

#### **F. Executive Order 13175, Coordination with Indian Tribal Governments**

Executive Order 13175, entitled “Consultation and Coordination with Indian Tribal Governments” (65 FR 67249, November 9, 2000), requires EPA to develop an accountable process to ensure “meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications.” This proposed rule does not have tribal implications, as specified in Executive Order 13175. It will not have substantial direct effects on tribal governments. Thus, Executive Order 13175 does not apply to this rule. EPA specifically solicits additional comment on this proposed rule from tribal officials.

#### **G. Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks**

*Protection of Children from Environmental Health Risks and Safety Risks* (62 FR 19885, April 23, 1997), applies to any rule that: (1) is determined to be “economically significant” as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other

potentially effective and reasonably feasible alternatives considered by the Agency. This action is not subject to Executive Order 13045 because it is not an economically significant regulatory action based on health or safety risks subject to Executive Order 13045 (62 FR 19885, April 23, 1997).

#### **H. Executive Order 13211, Actions that Significantly Affect Energy Supply, Distribution, or Use**

This rule is not subject to Executive Order 13211, “Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use” (66 FR 28355, May 22, 2001) because it is not a significant regulatory action under Executive Order 12866.

#### **I. National Technology Transfer and Advancement Act (NTTAA)**

Section 12 of the NTTAA of 1995 requires Federal agencies to evaluate existing technical standards when developing a new regulation. To comply with NTTAA, EPA must consider and use “voluntary consensus standards” (VCS) if available and applicable when developing programs and policies unless doing so would be inconsistent with applicable law or otherwise impractical. EPA believes that VCS are inapplicable to this action. Today’s limited approval and limited disapproval does not require the public to perform activities conducive to the use of VCS.

#### **J. Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations**

Executive Order 12898 (59 FR 7629 (Feb. 16, 1994)) establishes federal executive policy on environmental justice. Its main provision directs federal agencies, to the greatest extent

practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States.

EPA lacks the discretionary authority to address environmental justice in this Virginia Regional Haze proposed action. In reviewing SIP submissions, EPA's role is to approve or disapprove state choices, based on the criteria of the Clean Air Act. Accordingly, it does not provide EPA with the discretionary authority to address, as appropriate, disproportionate human health or environmental effects, using practicable and legally permissible methods, under Executive Order 12898.

#### **List of Subjects in 40 CFR Part 52**

Environmental protection, Air pollution control, Intergovernmental relations, Nitrogen oxides, Particulate matter, Reporting and recordkeeping requirements, Sulfur dioxide, Volatile organic compounds.

**AUTHORITY:** 42 U.S.C. 7401 *et seq.*

January 17, 2012

Dated:

/s/

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W. C. Early,  
Acting Regional Administrator,  
Region III.